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PURCHASED FROM THE INCOME OF THE
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David P.
Wheatland

Obj.n 1. That notwithstanding what common Chymists have prov'd or taught, it may reasonably enough be doubted how far and in what Sense Fire ought to be esteem'd a genuine and universal Instrument of analyzing mixt Bodies. 48

2. That it is not so sure as both Chymists and Peripatetians are wont to think it, that every seemingly similar or distinct Substance, that is separated from a Body by the help of the Fire, was pre-existent in it as a Principle or Element of it. 103

3 That it does not appear that mixt Bodies are resoluble by fire, into just three distinct Substances neither more or less, as they may be look'd upon as Elementary. 164

4 That tho' these tria prima may seem homogenious Bodies yet have they not that purity and Simplicity as is requisite to Elements 203.

THE

Sceptical Chymist:

OR

CHYMICO-PHYSICAL

Doubts & Paradoxes,

Touching the

EXPERIMENTS

WHEREBY

VULGAR SPAGIRISTS

Are wont to Endeavour to Evince their

SALT, SULPHUR

AND

MERCURY,

TO BE

The True Principles of Things.

To which in this Edition are subjoyn'd divers Experiments and Notes about the *Producibleness of Chymical Principles.*

OXFORD,

Printed by *HENRY HALL* for *Ric. Davis*, and *B. Took* at the Ship in St. *Pauls* Church-Yard. 1680.

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A PREFACE INTRODVCTORY

To the following Treatise.



TO give the Reader an account, Why the following Treatise is suffer'd to pass abroad so maim'd and imperfect, I must inform him that 'tis now long since, that to gratify an ingenious Gentleman, I set down some of the Reasons that kept me from fully acquiescing either in the Peripatetical, or in the Chymical Doctrine, of the Material Principles of mixt Bodies. This Discourse some years after falling into the hands of some learned men, had the good luck to be so favourably receiv'd and advantagiously spoken of by them, that having had more than ordinary Invitations given me to make it publick, I thought fit to review it, that I might retrench some things that seem'd not so fit to be shewn to every Reader, And substitute some of those other things that occurr'd to me of

the tryalls and obſervations I had ſince made: What became of my papers, I elſewhere mention in a Preface where I complain of it: But ſince I writ That, I found many ſheets that belong'd to the ſubjects I am now about to diſcourſe of. Wherefore ſeeing that I had then in my hands as much of the firſt Dialogue as was requiſite to ſtate the Caſe, and ſerve for an Introduction as well to the conference betwixt Carneades *and* Eleutherius, *as to ſome other Dialogues, which for certain reaſons are not herewith publiſh'd, I reſolv'd to ſupply, as well as I could, the Contents of a Paper belonging to the ſecond of the following Diſcourſes, which I could not poſſibly retrive, though it were the chief of them all. And having once more try'd the Opinion of Friends, but not the ſame, about this imperfect work, I found it ſuch, that I was content in complyance with their Deſires, that not only it ſhould be publiſh'd, but that it ſhould be publiſh'd as ſoon as conveniently might be. I had indeed all along the Dialogues ſpoken of my ſelf, as of a third Perſon; For they containing Diſcourſes which were among the firſt Treatiſes that I ventur'd long ago to write of matters Philoſophical, I had reaſon to deſire, with the Painter,* to latere pone tabulam, *and hear what men would ſay of them, before I own'd my ſelf to be their Author. But beſides that now I find, 'tis not unknown to many who it is*

that

that writ them, I am made to believe that 'tis not inexpedient, they ſhould be known to come from a Perſon altogether a ſtranger to Chymical Affairs. And I made the leſs ſcruple to let them come abroad uncompleated, partly, becauſe my affairs and Pre-ingagements to publiſh divers other Treatiſes allow'd me ſmall hopes of being able in a great while to compleat thoſe Dialogues. And partly becauſe I am not unapt to think, that they may come abroad ſeaſonably enough, though not for the Authors reputation, yet for other purpoſes. For I obſerve, that of late Chymiſtry begins, as indeed it deſerves, to be cultivated by Learned Men who before deſpis'd it; and to be pretended to by many who never cultivated it, that they may be thought not to be ignorant of it: Whence it is come to paſſe, that divers Chymical Notions about Matters Philoſophicall are taken for granted and employ'd, and ſo adopted by very eminent Writers both Naturaliſts and Phyſitians. Now this I fear may prove ſomewhat prejudicial to the Advancement of ſolid Philoſophy: For though I am a great Lover of Chymical Experiments, and though I have no mean eſteem of divers Chymical Remedies, yet I diſtinguiſh theſe from their Notions *about the cauſes of things and their manner of Generation. And for ought I can hitherto diſcern, there are a thouſand* Phænomena *in Nature, beſides a*

Multitude of Accidents relating to the humane Body, which will scarcely be clearly and satisfactorily made out by them that confine themselves to deduce things from Salt, Sulphur and Mercury, and the other Notions peculiar to the Chymists, without taking much more Notice than they are wont to do, of the Motions and Figures, of the small parts of Matter and the other more Catholick and Fruitful affections of Bodies. Wherefore it will not perhaps be now unseasonable to let our Carneades *warne Men, not to subscribe to the grand Doctrine of the Chymists touching their three Hypostatical Principles, till they have a little examin'd it, and consider'd, how they can clear it from his objections, divers of which 'tis like they may never have thought on; since a Chymist scarce would, and none but a Chymist could propose them. I hope also it will not be unacceptable to several Ingenious Persons, who are unwilling to determine of any important Controversie, without a previous consideration of what may be said on both sides, and yet have greater desires to understand Chymical Matters, than opportunities of learning them, to find here together, besides several Experiments of my own purposely made to Illustrate the Doctrine of the Elements, divers others scarce to be met with, otherwise then Scatter'd among many Chymical Books: And to Find these Associated*

ciated Experiments ſo Deliver'd as that an Ordinary Reader, if he be but acquainted with the uſual Chymical Termes, may eaſily enough underſtand them; and even a wary One may ſafely rely on Them. Theſe Things I add, becauſe a perſon any Thing vers'd in the Writings of Chymiſts cannot but Diſcern by their obſcure, ambiguous, and almoſt Ænigmatical Way of expreſſing what they pretend to Teach, that they have no Mind to be underſtood at all, but by the Sons of Art (*as they call them*) *nor to be Underſtood even by theſe without Difficulty and Hazardous Tryalls. Inſomuch that ſome of Them Scarce ever ſpeak ſo candidly, as when they make uſe of that known Chymical Sentence;* Ubi palam locuti ſumus, ibi nihil diximus. *And as the obſcurity of what ſome Writers deliver makes it very difficult to be underſtood; ſo the Unfaithfulneſs of too many others makes it unfit to be reli'd on. For though unwillingly, Yet I muſt for the truth ſake, and the Readers, warne him not to be forward to believe Chymical Experiments when they are ſet down only by way of Preſcriptions, and not of Relations; that is, unleſs he that delivers them mentions his doing it upon his own particular knowledge, or upon the Relation of ſome credible perſon, avowing it upon his own experience. For I*

am troubled, I must complain, that even Eminent Writers, both Physitians and Philosophers, whom I can easily name, if it be requir'd, have of late suffer'd themselves to be so far impos'd upon, as to Publish and Build upon Chymical Experiments, which questionless they never try'd; for if they had, they would, as well as I, have found them not to be true. And indeed it were to be wish'd, that now that those begin to quote Chymical Experiments that are not themselves Acquainted with Chymical Operations, men would Leave off that Indefinite Way of Vouching the Chymists say this, or the Chymists affirme that, and would rather for each Experiment they alledge name the Author or Authors, upon whose credit they relate it; For, by this means they would secure themselves from the suspition of falshood, (to which the other Practice Exposes them) and they would leave the Reader to Judge of what is fit for him to Believe of what is Delivered, whilst they employ not their own great names to Countenance doubtfull Relations; and they will also do Justice to the Inventors or Publishers of the true Experiments, as well as upon the Obtruders of false ones. Whereas by that general Way of quoting the Chymists, the candid Writer is Defrauded of the particular Praise, and the impostor escapes the Personal Disgrace that is due to him.

The

The remaining Part of this Preface must be imploy'd in saying something for Carneades, *and something for my Selfe.*

And first, Carneades *hopes that he will be thought to have disputed civilly and Modestly enough for one that was to play the Antagonist and the Sceptick. And if he any where seem to slight his Adversaries Tenents and Arguments, he is willing to have* it *look'd upon as what he was induc'd to, not so much by his Opinion of them, as the Examples of* Themistius *and* Philoponus, *and the custom of such kind of Disputes.*

Next, In case that some of his Arguments shall not be thought of the most Cogent sort that may be, he hopes it will be consider'd that it ought not to be Expected, that they should be So. For, his part being chiefly, but to propose Doubts and Scruples, he does enough, if he shews that his Adversaries Arguments are not strongly Concluding, though his own be not so neither. And if there should appear any disagreement betwixt the things he delivers in divers passages, he hopes it will be considered, that it is not necessary that all the things a Sceptick Proposes, should be consonant; since it being his work to Suggest doubts against the Opinion he questions, it is allowable for him to propose two or more several Hypotheses *about the same thing: And to*

say

say that it may be accounted for this way, or that way, or the other Way, though these wayes be perhaps inconsistent among themselves. Because it is enough for him, if either of the proposed Hypotheses *be but as probable as that he calls in question. And if he propose many that are Each of them probable, he do's the more ratify his doubts, by making it appear the more difficult to be sure, that that way which they all differ from is the true. And our* Carneades *by holding the Negative, has this advantage, that if among all the Instances he brings to invalidate the Vulgar Doctrine of those he Disputes with, any one be Irrefragable, that alone is sufficient to overthrow a Doctrine which Universally asserts what he opposes. For, it cannot be true, that all Bodies whatsoever that are reckon'd among the Perfectly mixt Ones, are compounded of such a Determinate Number of such or such Ingredients, in case any one such Body can be produc'd, that is not so compounded; and he hopes too, that Accurateness will be the less expected from him, because his undertaking obliges him to maintain such Opinions in Chymistry, and that chiefly by Chymicall Arguments, as are Contrary to the very Principles of the Chymists, From whose writings it is not Therefore like he should receive any intentional Assistance, except from some Passages of the Bold and Ingenious* Helmont,

mont, *with whom he yet disagrees in many things (which reduce him to explicate Divers Chymical* Phænomena, *according to other Notions:) And of whose Ratiocinations, not only some seem very Extravagant, but even the Rest are not wont to be as considerable as his Experiments. And though it be True indeed, that some* Aristotelians *have occasionally written against the Chymical* Doctrine *he Oppugnes, yet since they have done it according to their Principles, And since our* Carneades *must as well oppose their* Hypothesis *as that of the Spagyrist, he was fain to fight his Adversaries with his own Weapons, Those of the Peripatetick being Improper if not hurtfull for a Person of his Tenents; besides that those* Aristotelians, *(at Least those he met with,) that have written against the Chymists, seem to have had so little Experimental Knowledge in Chymical Matters, that by their frequent Mistakes and unskilfull way of Oppugning, they have too often expos'd themselves to the Derision of their adversaries, for writing so Confidently against what they appeare so little to understand.*

And Lastly, Carneades *hopes, he shall do the Ingenious this Piece of service, that by having Thus drawn the Chymists Doctrine out of their Dark and Smokie Laboratories, and both brought it into the open light, and shewn the weak-*

nesse

ness of their Proofs, that have hitherto been wont to be brought for it, either Judicious Men shall henceforth be allowed calmly and after due information to disbelieve it, or those abler Chymists, that are zealous for the reputation of it, will be obliged to speak plainer than hitherto has been done, and maintain it by better Experiments and Arguments than those Carneades *hath examin'd: so That he hopes the Curious will one Way or other Derive either satisfaction or instruction from his endeavours. And as he is ready to make good the profession he makes in the close of his Discourse, of being ready to be better inform'd, so he expects either to be indeed inform'd, or to be let alone. For though, if any Truly knowing Chymists shall Think fit in a civill and rationall way to shew him any truth touching the matter in Dispute That he yet discernes not,* Carneades *will not refuse either to admit, or to own a conviction: yet if any impertinent Person shall, either to get Himselfe a Name, or for what other end soever, wilfully or carelesly mistake the State of the controversie, or the sence of his Arguments, or shall rail instead of arguing, as hath been done of Late in Print by divers Chymists; or lastly, shall write against them in a canting way; I mean shall express himselfe in ambiguous or obscure termes, or argue from Experiments not intelligibly enough Deliver'd,* Carneades *professes, That he values his*

G. and F. and H. and others, in their books against one another.

his time so much, as not to think the answering such Trifles worth the loss of it.

And now having said thus much for Carneades, *I hope the Reader will give me leave to say something for my self.*

And first, if some morose Readers shall find fault with my having made the Interlocutors upon occasion complement with one another, and that I have almost all along written these Dialogues in a stile more Fashionable than That of meer Scholars is wont to be, I hope I shall be excus'd by them that shall consider, that to keep a due decorum *in the Discourses, it was fit that in a book written by a Gentleman, and wherein only Gentlemen are introduc'd as speakers, the Language should be more smooth and the Expressions more Civil than is usual in the more Scholastick way of writing. And indeed, I am not sorry to have this Opportunity of giving an example how to manage even Disputes with Civility; whence perhaps some Readers will be assisted to discern a Difference betwixt Bluntness of Speech and Strength of reason, and find that a man may be a Champion for Truth, without being an* Enemy to Civility; *and may confute an Opinion without railing at Them that hold it; To whom he that desires to convince and not to provoke them, must make some amends by his Civility*

vility to their Persons, for his severity to their mistakes; and must say as little else as he can, to displease them, when he saies that they are in an error.

But perhaps other Readers will be less apt to find fault with the Civility of my Disputants, than the Chymists will be, upon the reading of some Passages of the following Dialogue, to accuse Carneades *of Asperity. But if I have made my Sceptick sometimes speak sleightingly of the Opinions he oppose's, I hope it it will not be found that I have done any more, than became the Part he was to act of an Opponent: especially, if what I have made him say be compar'd with what the Prince of the Romane Orators himself makes both great Persons and Friends say of one anothers Opinions, in his excellent Dialogues,* De Natura Deorum: *And I shall scarce be suspected of Partiality, in the case, by them that take Notice that there is full as much (if not far more) liberty of sleighting their Adversaries Tenents to be met with in the Discourses of those with whom* Carneades *disputes. Nor need I make the Interlocutors speak otherwise than freely in a Dialogue, wherein it was sufficiently intimated, that I meant not to declare my own Opinion of the Arguments propos'd, much lesse of the whole Controversy it selfe, otherwise than as it may by an attentive Reader be gues's'd at by some Passages of* Carneades: (*I say, some Passages, because I make not all that he saies, especially in the heat of Disputation, mine,*) *partly in this Discourse, and partly in some other* **Dialogues betwixt the same Speakers (though they treat not immediately of the Elements) which have long layn*

*The Dialogues here meant are those about Heat, Fire, Flame &c. (seen by two Secretaries of the Royal Society) that the Author somewhere complaines to have been missing with other things of his presently after the hasty removal of his Goods by Night in the great fire of *London*.

layn by me, and expect the Entertainement that these present Discourses will meet with. And indeed they will much mistake me, that shall conclude from what I now publish, that I am at Defyance with Chymistry, or would make my Readers so. I hope the Specimina *I have lately publish'd of an attempt to shew the usefulness of Chymical Experiments to Contemplative Philosophers, will give those that read them other thoughts of me, and I had a design (but wanted opportunity) to publish with these Papers an Essay I have lying by me, the greater part of which is Apologetical for one sort of Chymists. And at least, as for those that know me, I hope the pain I have taken in the fire will both convince them, that I am far from being an Enemy to the Chymists Art, (though I am no friend to many that disgrace it by professing it,) and perswade them to believe me when I declare that I distinguish betwixt those Chymists that are either Cheats, or but Laborants, and the true* Adepti; *By whome could I enjoy there conversation, I would both willingly and thankfully be instructed; especially concerning the Nature and Generation of Metals: And possibly, those that know how little I have remitted of my former addictedness to make Chymical Experiments, will easily believe, that one of the chief Designes of this Sceptical Discourse was, not so much to discredit Chymistry, as to give an occasion and a kind of necessity to the more knowing Artists to lay aside a little of their overgreat Reservedness, and either explicate or prove the Chymicall Theory better than ordinary Chymists have done, or by enriching us with some of their nobler se-*

crets

crets to evince that Their art is able to make amends even for the deficiencies of their Theory: And thus much I shall make bold to add, that we shall much undervalue Chymistry, if we imagine, that it cannot teach us things farr more useful, not only to Physick but to Philosophy, than those that are hitherto known to vulgar Chymists. And yet as for inferior Spagirists themselves, they have by their labours deserv'd so well of the common Wealth of Learning, that methinks 'tis Pity they should ever misse the Truth which they have so industriously sought. And though I be no Admirer of the Theorical Part of their Art, yet my conjectures will much deceive me, if the Practical Part be not hereafter much more cultivated than hitherto it has been, and do not both employ Philosophy and Philosophers, and hope to make Men such. Nor would I, that have been diverted by other Studies as well as affairs, be thought to pretend being a profound Spagyrist, by finding so many faults in the Doctrine wherein the generality of Chymists scruples not to Acquisce: For besides that 'tis most commonly far easier to frame Objections against any propos'd Hypothesis, *than to propose an* Hypothesis *not lyable to Objections (besides this I say) 'tis no such great matter, if whereas Beginners in Chymistry are commonly at once imbu'd with the Theory and Operations of their profession, I who had the good fortune to Learn the Operations from illiterate Persons, upon whose credit I was not Tempted to take up any opinion about them, should consider things with lesse prejudice, and consequently*

sequently with other Eyes than the Generality of Learners; And should be more dispos'd to accommodate the Phænomena *that occurr'd to me to other* Notions *than to those of the Spagirists. And having at first entertain'd a suspition That the Vulgar Principles were lesse General and comprehensive, or lesse considerately Deduc'd from Chymical Operations, than was beleiv'd, it was not uneasie for me both to Take notice of divers* Phænomena, *overlook'd by prepossest Persons, that seem'd not to suite so well with the* Hermetical *Doctrine; and to devise some Experiments likely to furnish me with Objections against it, not known to many, that having practis'd Chymistry longer perchance than I have yet liv'd, may have far more* Experience, *Than I, of particular processes.*

To conclude, whether the Notions *I have propos'd, and the Experiments I have communicated, be considerable, or not, I willingly leave others to Judge; and this only I shall say for my Self, That I have endeavour'd to deliver matters of Fact, so faithfully that I may as well assist the lesse skilful Readers to examine the Chymical* Hypothesis, *as provoke the Spagirical Philosophers to illustrate it: which if they do, and that either the Chymical opinion, or the Peripatetick, or any other Theory of the Elements*

differing from that I am most inclin'd to, shall be intelligibly explicated, and duly prov'd to me; what I have hitherto discours'd will not hinder it from making a Proselyte of a Person that Loves Fluctuation of Judgment little enough to be willing to be eas'd of it by any thing but Error.

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PAg. 2. l. 3. read *contrived.* p. 22. l. 6. *after Urinous* r. *Salts.* p. 46. l. 16. r. *from.* p. 90. l. 2. *pro next* r. *most.* p. 125. l. 4. r. *Cinnabar.* p. 158. l. 20. r. *they.* p. 167. l. 3. r. *solid.* p. 171. l. 29. *d. being* p. 180. l. 9. r. *propos'ed.* p. 185. l. 4. *after Mercury,* r. *into that red powder which Chymists call precipitate per se, and I have found by tryals purposely made, and else where related, that this powder without any further addition may be reduced into running Mercury.* p. 210. l. 13. *pro in* r. *from.* p. 211. l. 11. *after was,* r. *not.* p. 230. l. 6. r *this.* p. 233. l. 17. r. *impossibility.* p. 243. l. 3. *after persons.* r. *not.* p. 259. l. 11. r. *these notes.* p. 260. l. *ult pro probable* r. *proportion.* p. 268. l. 12. r. *to destroy.*

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PHYSIOLOGICAL CONSIDERATIONS

Touching

The experiments wont to be employed to evince either the IV Peripatetick Elements, or the III Chymical Principles of Mixt Bodies.

Part of the First Dialogue.

I Perceive that divers of my Friends have thought it very ſtrange to hear me ſpeak ſo irreſolvedly, as I have been wont to do, concerning thoſe things which ſome take to be the Elements, and others to be the Principles of all mixt Bodies. But I bluſh not to acknowledge that I much leſs ſcruple to confeſs that I Doubt, when I do ſo, than

to profeſs that I Know what I do not: And I ſhould have much ſtronger Expectations than I dare yet entertain, to ſee Philoſophy ſolidly eſtabliſh't, if men would more carefully diſtinguiſh thoſe things that they know, from thoſe that they ignore or do but think, and then explicate clearly the things they conceive they underſtand, acknowledge ingenuouſly what it is they ignore, and profeſs ſo candidly their Doubts, that the induſtry of intelligent perſons might be ſet on work to make further enquiries, & the eaſineſs of leſs diſcerning Men might not be impos'd on. But becauſe a more particular accompt will probably be expected of my unſatisfyedneſs not only with the Peripatetick, but with the Chymical Doctrine of the Primitive Ingredients of Bodies: It may poſſibly ſerve to ſatisfy others of the excuſableneſs of my diſatisfaction to peruſe the enſuing Relation of what paſſed a while ſince at a meeting of perſons of ſeveral opinions, in a place that need not here be named; where the ſubject, whereof we have been ſpeaking, was amply and variouſly diſcours'd of.

It

It was on one of the faireſt dayes of this Summer that the inquiſitive *Eleutherius* came to invite me to make a viſit with him to his friend *Carneades*. I readily conſented to this motion, telling him that if he would but permit me to go firſt and make an excuſe at a place not farr off, where I had at that hour appointed to meet, but not about a buſineſs either of moment, or that could not well admit of a delay, I would preſently wait on him, becauſe of my knowing *Carneades* to be ſo converſant with nature and with Furnaces, and ſo unconfin'd to vulgar Opinions, that he would probably by ſome ingenious Paradox or other, give our mindes at leaſt a pleaſing Exerciſe, and perhaps enrich them with ſome ſolid inſtruction. *Eleutherius* then firſt going with me to the place where my Apology was to be made, I accompanied him to the lodging of *Carneades*, where when we were come, we were told by the Servants, that he was retired with a couple of Friends (whoſe names they alſo told us) to one of the Arbours in his Garden, to enjoy under its coole ſhades a delightful protection from the yet troubleſome heat of the Sun.

Eleutherius being perfectly acquainted with that Garden immediately led me to the Arbour, and relying on the intimate familiarity that had been long cherish'd betwixt him and *Carneades*; in spight of my Reluctancy to what might look like an intrusion upon his privacy, drawing me by the hand, he abruptly entered the Arbour, where we found *Carneades*, *Philoponus*, and *Themistius*, sitting close about a little round Table, on which, besides paper, pen, and inke, there lay two or three open Books; *Carneades* appeared not at all troubled at this surprise, but rising from the Table, received his Friend with open looks and armes, and welcoming me also with his wonted freedom and civility, invited us to rest our selves by him, which, as soon as we had exchanged with his two Friends (who were ours also) the civilities accustomed on such occasions, we did. And he presently after we had seated our selves, shutting the Books that lay open, and turning to us with a smiling countenance, seemed ready to begin some such unconcerning discourse as is wont to pass, or rather wast the time in promiscuous companies.

But

But *Eleutherius* guessing at what he meant to do, prevented him by telling him, I perceive *Carneades* by the books that you have been now shutting, and much more by the posture wherein I found Persons so qualifi'd to discourse of serious matters, and so accustom'd to do it, that you three were, before our coming, engag'd in some Philosophical conference, which I hope you will either prosecute, and allow us to be partakers of, in recompence of the freedome we have us'd in presuming to surprise you, or else give us leave to repair the injury we should otherwise do you, by leaving you to the freedom we have interrupted, and punishing our selves for our boldness by depriving our selves of the happiness of your company. With these last words he and I rose up, as if we meant to be gone: But *Carneades* suddenly laying hold on his arme, and stopping him by it, smileingly told him, We are not so forward to lose good company as you seem to imagine; especially since you are pleas'd to desire to be present at what we shall say, about such a Subject as that You found us considering. For that, being

the number of the Elements, Principles, or Materiall Ingredients of Bodies, is an enquiry whose truth is of that Importance, and of that Difficulty, that it may as well deserve, as require, to be searched into by such skilfull Indagators of Nature, as your selves. And therefore we sent to invite the bold and acute *Leucippus* to lend us some light by his Atomical Paradox, upon which we expected such pregnant hints, that 'twas not without a great deal of trouble that we had lately word brought us that he was not to be found; & we had likewise begg'd the Assistance of your presence and thoughts, had not the messenger we employ'd to *Leucippus* inform'd us that as he was going, he saw you both pass by towards another part of the Town; And this frustrated expectation of *Leucippus* his company, who told me but last night that he would be ready to give me a meeting where I pleas'd to day, having very long suspended our conference about the freshly mention'd Subject, it was so newly begun when you came in, that we shall scarce need to repeat any thing to acquaint you with what had pass'd betwixt us before

your

your arrival, so that I cannot but look upon it as a fortunate Accident that you should come so seasonably, to be not hearers alone, but we hope Interlocutors at our conference. For we shall not only allow of your presence at it, but desire your Assistance in it; which I add both for other reasons, and because though these learned Gentlemen (saies he, turning to his two friends) need not fear to discourse before any Auditory, provided it be intelligent enough to understand them, yet for my part (continues he with a new smile,) I shall not dare to vent my unpremeditated thoughts before two such Criticks, unless by promising to take your turnes of speaking, You will allow me mine of quarrelling, with what has been said. He and his friends added divers things to convince us that they were both desirous that we should hear them, and resolved against our doing so, unless we allowed them sometimes to hear us. *Elutherius*, after having a while fruitlesly endeavoured to obtain leave to be silent, promis'd he would not be so alwayes, provided that he were permitted according to the freedom of his

Genius and Principles to side with one of them in the managing of one Argument, and, if he saw cause, with his Antagonist, in the Prosecution of another, without being confin'd to stick to any one party or opinion, which was after some debate accorded him. But I, conscious to my own Disability's, told them resolutely that I was as much more willing, as more fit, to be a hearer than a speaker, among such knowing Persons, and on so abstruse a Subject. And that therefore I beseeched them without necessitating me to proclaim my weaknesses, to allow me to lessen them by being a silent Auditor of their Discourses: to suffer me to be at which I could present them no motive, save that their instructions would make them in me a more intelligent Admirer. I added, that I desir'd not to be idle whilst they were imploy'd, but would if they pleas'd, by writing down in short hand what should be delivered, preserve Discourses that I knew would merit to be lasting. At first *Carneades* and his two friends utterly rejected this motion; and all that my Resolutenes to make use of my ears, not

tongue

tongue at their debates, could do, was to make them acquiesce in the Proposition of *Eleutherius*, who thinking himself concern'd, because he brought me thither, to afford me some faint assistance, was content that I should register their Arguments, that I might be the better able after the conclusion of their conference to give them my sence upon the Subject of it, (The number of Elements or Principles) which he promis'd I should do at the end of the present Debates, if time would permit, or else at our next meeting. And this being by him undertaken in my name, though without my consent, the company would by no means receive my Protestation against it, but casting, all at once, their eyes on *Carneades*, they did by that and their unanimous silence, invite him to begin; which (after a short pause, during which he turn'd himself to *Eleutherius* and me) he did in this manner.

Notwithstanding the subtile reasonings I have met with in the books of the Peripateticks, and the pretty experiments that have been shew'd me in the Laboratories of Chymists, I am of so diffident

diffident, or dull a Nature, as to think that if neither of them can bring more cogent arguments to evince the truth of their assertion than are wont to be brought; a Man may rationally enough retain some doubts concerning the very number of those materiall Ingredients of mixt bodies, which some would have us call Elements, and others Principles. Indeed when I considered, that the Tenents concerning the Elements, are as considerable amongst the Doctrines of natural Philosophy, as the Elements themselves are among the bodies of the Universe, I expected to find those Opinions solidly establish'd, upon which so many others are superstructed. But when I took the pains impartially to examine the bodies themselves that are said to result from the blended Elements, and to torture them into a confession of their constituent Principles, I was quickly induc'd to think that the number of the Elements has been contended about by Philosophers with more earnestness, than success. This unsatisfiedness of mine has been much wonder'd at, by these two Gentlemen (at which words he pointed at *Themisti-*

us,

is and *Philoponus*) who though they differ almoſt as much betwixt themſelves about the queſtion we are to conſider, as I do from either of them, yet they both agree very well in this, that there is a determinate number of ſuch ingredients as I was juſt now ſpeaking of, and that what that number is, I ſay not, may be (for what may not ſuch as they perſwade?) but is wont to be clearly enough demonſtrated both by Reaſon and Experience. This has occaſion'd our preſent Conference. For our Diſcourſe this afternoon, having fallen from one ſubject to another, and at length ſetl'd on this, they proffer'd to demonſtrate to me, each of them the truth of his opinion, out of both the Topicks that I have freſhly nam'd. But on the former (that of Reaſon ſtrictly ſo taken) we declin'd inſiſting at the preſent, leſt we ſhould not have time enough before ſupper to go through the Reaſons and Experiments too. The latter of which we unanimouſly thought the moſt requiſite to be ſeriouſly examin'd. I muſt deſire you then to take notice Gentlemen (continued *Carneades*) that my preſent buſineſs doth not ob-

oblige me ſo to declare my own opinion on the Subject in queſtion; as to aſſert or deny the truth either of the Peripatetick, or the Chymical Doctrine concerning the number of the Elements, but only to ſhew you that neither of theſe Doctrines hath been ſatisfactorily proved by the arguments commonly alledged on its behalfe. So that if I really diſcern (as perhaps I think I do) that there may be a more rational account than ordinary, given of one of theſe opinions, I am left free to declare my ſelf of it, notwithſtanding my preſent engagement, it being obvious to all your obſervation, that a ſolid truth may be generally maintained by no other, than incompetent Arguments. And to this Declaration I hope it will be needleſs to add, that my task obliges me not to anſwer the Arguments that may be drawn either for *Themiſtius* or *Philoponus*'s Opinion from the Topick of reaſon, as oppoſed to experiments; ſince 'tis theſe only that I am to examine, and not all theſe neither, but ſuch of them alone, as either of them ſhall think fit to inſiſt on, and as have hitherto been wont to be brought either to prove that 'tis

he four Peripatetick Elements, or that tis the three Chymical Principles that ll compounded bodies consist of. These hings (adds *Carneades*) I thought my elf obliged to premise, partly lest you hould do these Gentlemen (pointing t *Themistius* and *Philoponus*, and smiling n them) the injury of measuring their arts by the arguments they are ready o propose, the lawes of our Conference confining them to make use of those that he vulgar of Philosophers (for even of hem there is a vulgar) has drawn up to heir hands; and partly, that you should ot comdemn me of presumption for disputing against persons over whom I can ope for no advantage, that I must not derive from the nature, or rules of our controversy, wherein I have but a negative to defend, and wherein too I am like on several occasions to have the Assistance of one of my disagreeing adversaries against the other.

Philoponus and *Themistius* soon returned this complement with civilities of the like nature, in which *Eleutherius* perceiving them engaged, to prevent the further loss of that time of which they were not like to have very much to spare,

he

he minded them that their present busi-
ness was not to exchange complements
but Arguments: and then addressing his
speech to *Carneades*, I esteem it no smal
happiness (saies he) that I am come
here so luckily this Evening. For I have
been long disquieted with Doubts con-
cerning this very subject which you are
now ready to debate. And since a
Question of this importance is to be now
discussed by persons that maintain such
variety of opinions concerning it, & are
both so able to enquire after truth, and
so ready to embrace it by whomsoever
and on what occasion soever it is presen-
ted them; I cannot but promise my self
that I shall, before we part, either lose my
Doubts or the hopes of ever finding
them resolved: *Eleutherius* paused not
here; but to prevent their answer, added
almost in the same breath; and I am
not a little pleased to find that you are
resolved on this occasion to insist rather
on Experiments than Syllogismes. For
I, and no doubt You, have long obser-
ved, that those Dialectical subtleties,
that the Schoolmen too often employ a-
bout Physiological Mysteries, are wont
much more to declare the wit of him

that

iat uſes them, than increaſe the know-
:dge or remove the doubts of ſober lo-
ers of truth. And ſuch captious ſubtle-
es do indeed often puzzle & ſometimes
lence men, but rarely ſatisfy them.
eing like the tricks of Jugglers, where-
y men doubt not but they are chea-
:d, though oftentimes they cannot de-
lare by what ſlights they are impoſed
n. And therefore I think you have done
ery wiſely to make it your buſineſs to
onſider the *Phænomena* relating to the
reſent Queſtion, which have been af-
orded by experiments, eſpecially ſince
t might ſeem injurious to our ſenſes by
hoſe mediation we acquire ſo much
f the knowledge we have of things cor-
oral, to have recourſe to far-fetched &
bſtracted Ratiocinations, to know what
re the ſenſible ingredients of thoſe ſen-
ible things that we daily ſee and han-
dle, and are ſuppoſed to have the liberty
o untwiſt (if I may ſo ſpeak) into the
rimitive bodies they conſiſt of. He an-
nexed that he wiſhed therefore they
would no longer delay his expected ſa-
tisfaction, if they had not, as he feared
they had, forgotten ſomething prepara-
tory to their debate; and that was to

lay

lay down what ſhould be all along understood by the word Principle or Element. *Carneades* thank'd him for his admonition, but told him that they had not been unmindful of ſo requiſite a thing. But that being Gentlemen & very far from the litigious humour of loving to wrangle about words, or terms, or notions as empty; they had before his coming in, readily agreed promiſcuouſly to uſe when they pleaſed, Elements and Principles as terms equivalent: and to underſtand both by the one and the other, thoſe primitive and ſimple Bodies of which the mixt ones are ſaid to be compoſed, and into which they are ultimately reſolved. And upon the ſame account (he added) we agreed to diſcourſe of the opinions to be debated, as we have found them maintained by the Generality of the aſſertors of the four Elements of the one party, and of thoſe that receive the three Principles on the other, without tying our ſelves to enquire ſcrupulouſly what notion either *Ariſtotle* or *Paracelſus*, or this or that Interpreter, or follower of either of thoſe great perſons, framed of Elements or Principles; our deſign being to examine, not what

these or those writers thought or taught, but what we find to be the obvious & most general opinion of those, who are willing to be accounted Favorers of the Peripatetick or Chymical Doctrine, concerning this subject.

I see not (saies *Eleutherius*) why you might not immediately begin to argue, if you were but agreed which of your two friendly Adversaries shall be first heard. And it being quickly resolv'd on that *Themistius* should first propose the Proofs for his Opinion, because it was the antienter, and the more general, he made not the company expect long before he thus addressed himself to *Eleutherius*, as to the Person least interessed in the dispute.

If you have taken sufficient notice of the late Confession which was made by *Carneades*, and which (though his Civility dressed it up in complementall Expressions) was exacted of him by his Justice, I suppose You will be easily made sensible, that I engage in this Controversie with great and peculiar Disadvantages, besides those which his Parts and my Personal Disabilities would bring to any other cause to be

maintained by me againſt him. For he juſtly apprehending the force of truth, though ſpeaking by no better a tongue than mine, has made it the chief condition of our Duell, that I ſhould lay aſide the beſt Weapons I have, and thoſe I can beſt handle; Whereas if I were allowed the freedom, in pleading for the four Elements, to employ the Arguments ſuggeſted to me by Reaſon to demonſtrate them, I ſhould almoſt as little doubt of making You a Proſelyte to thoſe unſever'd Teachers, Truth and *Ariſtotle*, as I do of your Candour & your Judgment. And I hope you will however conſider, that that great Favorite and Interpreter of Nature, *Ariſtotle*, who was (as his *Organum* witneſſes) the greateſt Maſter of Logick that ever liv'd, diſclaim'd the courſe taken by other petty Philoſophers (Antient and Modern) who not attending the Coherence and Conſequences of their Opinions, are more ſollicitous to make each particular Opinion plauſible independently upon the the reſt, than to frame them all ſo, as not only to be conſiſtent together, but to ſupport each other. For that great

Man

Man in his vaſt and comprehenſive Intellect, ſo fram'd each of his Notions, that being curiouſly adapted into one Syſteme, they need not each of them any other defence than that which their mutuall Coherence gives them: As 'tis in an Arch, where each ſingle ſtone, which if ſever'd from the reſt would be perhaps defenceleſs, is ſufficiently ſecur'd by the ſolidity and entireneſs of the whole Fabrick of which it is a part. How juſtly this may be apply'd to the preſent caſe, I could eaſily ſhew You, if I were permitted to declare to You, how hormonious *Ariſtotles* Doctrine of the Elements is with his other Principles of Philoſophy; and how rationally he has deduc'd their number from that of the combinations of the four firſt Qualities from the kinds of ſimple Motion belonging to ſimple bodies, and from I know not how many other Principles and *Phænomena* of Nature, which ſo conſpire with his Doctrine of the Elements, that they mutually ſtrengthen and ſupport each other. But ſince 'tis forbidden me to inſiſt on Reflections of this kind, I muſt proceed to tell You, that though the

Asserters of the four Elements value Reason so highly, and are furnish'd with Arguments enough drawn from thence, to be satisfi'd that there must be four Elements, though no man had ever yet made any sensible tryal to discover their Number, yet they are not destitute of Experience to satisfie others that are wont to be more sway'd by their senses than their Reason. And I shall proceed to consider the testimony of Experience, when I shall have first advertis'd You, that if Men were as perfectly rational, as 'tis to be wish'd they were, this sensible way of Probation would be as needless as 'tis wont to be imperfect. For it is much more high and Philosophical to discover things *a priore*, than *a posteriore*. And therefore the Peripatetick's have not been very sollicitous to gather Experiments to prove their Doctrines, contenting themselves with a few only, to satisfie those that are not capable of a Nobler Conviction. And indeed they employ Experiments rather to illustrate than to demonstrate their Doctrines, as Astronomers use Sphæres of pasteboard, to descend to the capacities

ties of such as must be taught by their senses, for want of being arriv'd to a clear apprehension of purely Mathematical Notions and Truths. I speak thus *Eleutherius* (adds *Themistius*) only to do right to Reason, and not out of Diffidence of the Experimental proof I am to alledge. For though I shall name but one, yet it is such a one as will make all other appear as needless as it self will be found Satisfactory. For if you but consider a piece of green Wood burning in a Chimney, You will readily discern in the disbanded parts of it the four Elements, of which we teach it and other mixt bodies to be compos'd. The fire discovers it self in the flame by its own light; the smoake by ascending to the top of the chimney, and there readily vanishing into air, like a River losing it self in the Sea, sufficiently manifests to what Element it belongs and gladly returnes. The water in its own form boyling and hissing at the ends of the burning Wood betrayes it self to more than one of our senses; and the ashes by their weight, their firiness, & their dryness, put it past doubt that they belong to the Element

of Earth. If I ſpoke (continues *Themiſtius*) to leſs knowing Perſons, I would perhaps make ſome Excuſe for building upon ſuch an obvious and eaſie *Analyſis*, but 'twould be, I fear, injurious, not to think ſuch an Apology needleſs to You, who are too judicious either to think it neceſſary that Experiments to prove obvious truths ſhould be farr fetch'd, or to wonder that among ſo many mixt Bodies that are compounded of the four Elements, ſome of them ſhould upon a ſlight *Analyſis* manifeſtly exhibite the Ingredients they conſiſt of. Eſpecially ſince it is very agreeable to the Goodneſs of Nature, to diſcloſe, even in ſome of the moſt obvious Experiments that men make, a Truth ſo important and ſo requiſite to be taken notice of by them. Beſides that our *Analyſis* by how much the more obvious we make it, by ſo much the more ſuitable it will be to the Nature of that Doctrine which 'tis alledged to prove, which being as clear and intelligible to the Underſtanding as obvious to the ſenſe, 'tis no marvel the learned part of Mankind ſhould ſo long and ſo generally imbrace it. For this Doctrine

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is very different from the whimseys of *Chymists* and other Modern Innovators, of whose *Hypotheses* we may observe, as Naturalists do of less perfect Animals, that as they are hastily form'd, so they are commonly short liv'd. For so these, as they are often fram'd in one week, are perhaps thought fit to be laughed at the next; and being built perchance but upon two or three Experiments are destroyed by a third or fourth, whereas the doctrine of the four Elements was fram'd by *Aristotle* after he had leasurely considered those Theories of former Philosophers which are now with great applause revived as discovered by these latter ages; And had so judiciously detected and supplyed the Errors and defects of former *Hypotheses* concerning the Elements, that his Doctrine of them has been ever since deservedly embraced by the letter'd part of Mankind: All the Philosophers that preceded him having in their several ages contributed to the compleatness of this Doctrine, as those of succeding times have acquiesc'd in it. Nor has an *Hypothesis*, so deliberately and maturely established, been called in Questi-

en till in the last Century *Paracelsus* and some few other sooty Empiricks, rather than (as they are fain to call themselves) Philosophers, having their eyes darken'd, and their Braines troubl'd with the smoak of their own Furnaces, began to rail at the Peripatetick Doctrine, which they were too illiterate to understand, and to tell the credulous World, that they could see but three Ingredients in mixt Bodies; which to gain themselves the repute of Inventors, they endeavoured to disguise by calling them, instead of Earth, and Fire, and Vapour, Salt, Sulphur, and Mercury; to which they gave the canting title of Hypostatical Principles. but when they came to describe them, they shewed how little they understood what they meant by them; by disagreeing as much from one another, as from the truth they agreed in opposing: For they deliver their *Hypotheses* as darkly as their Processes; and 'tis almost as impossible for any sober Man to find their meaning, as 'tis for them to find their Elixir. And indeed nothing has spread their Philosophy, but their great Brags and undertakings; notwithstanding all which, (saies *Themisti-*

is ſmiling) I ſcarce know any thing they have performed worth wondering at, ſave that they have been able to draw *Philoponus* to their Party, and to engage him to the Defence of an unintelligible *Hypotheſis*, who knowes ſo well as he does, that Principles ought to be like Diamonds, as well very clear, as perfectly ſolid.

Themiſtius having after theſe laſt words declared by his ſilence, that he had finiſhed his Diſcourſe, *Carneades* addreſſing himſelf, as his Adverſary had done, to *Eleutherius*, returned this Anſwer to it. I hop'd for a Demonſtration, but I perceive *Themiſtius* hopes to put me off with an Harangue, wherein he cannot have given me a greater Opinion of his Parts, than he has given me Diſtruſt for his *Hypotheſis*, ſince for it even a Man of ſuch Learning can bring no better Arguments. The Rhetorical part of his Diſcourſe, though it make not the leaſt part of it, I ſhall ſay nothing to, deſigning to examine only the Argumentative part, and leaving it to *Philoponus* to anſwer thoſe paſſages wherein either *Paracelſus* or *Chymiſts* are concern'd: I ſhall obſerve to You, that in what he has ſaid beſides

beſides, he makes it his Buſineſs to do theſe two things. The one to propoſe and make out an Experiment to demonſtrate the common Opinion about the four Elements; And the other, to inſinuate divers things which he thinks may repair the weakneſs of his Argument, from Experience, and upon other Accounts bring ſome credit to the otherwiſe defenceleſs Doctrine he maintains.

To begin then with his Experiment of the burning Wood, it ſeems to me to be obnoxious to not a few conſiderable Exceptions.

And firſt, if I would now deal rigidly with my Adverſary, I might here make a great Queſtion of the very way of Probation which he and others employ without the leaſt ſcruple, to evince, that the Bodies commonly call'd mixt, are made up of Earth, Air, Water, and Fire, which they are pleas'd alſo to call Elements; namely that upon the ſuppos'd *Analyſis* made by the fire, of the former ſort of *Concretes*, there are wont to emerge Bodies reſembling thoſe which they take for the Elements. For not to Anticipate here what I foreſee I ſhall

hall have occasion to insist on, when I ome to discourse with *Philoponus* con- erning the right that fire has to pass or the proper and Universal Instru- nent of Analyzing mixt Bodies, not to Anticipate that, I say, if I were dis- os'd to wrangle, I might alledge, that y *Themistius* his Experiment it would ppear rather that those he calls Ele- nents, are made of those he calls mixt Bodies, than mix'd Bodies of the Ele- nents. For in *Themistius*'s Analyz'd Wood, and in other Bodies dissipated nd alter'd by the fire, it appears, and ne confesses, that which he takes for E- ementary Fire and Water, are made out of the Concrete; but it appears not hat the Concrete was made up of Fire and Water. Nor has either He, or any Man, for ought I know, of his perswasi- on, yet prov'd that nothing can be ob- tained from a Body by the fire that was not *Pre-existent* in it.

At this unexpected objection, not only *Themistius*, but the rest of the company appear'd not a little surpriz'd; but after a while *Philoponus* conceiving his opini- on, as well as that of *Aristotle*, concern'd in that Objection, You cannot sure

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(saies he to *Carneades*) propose this Difficulty, not to call it Cavill, otherwise than as an Exercise of wit, and not as laying any weight upon it. For how can that be separated from a thing that was not existent in it. When, for instance, a Refiner mingles Gold and Lead, and exposing this Mixture upon a Cuppell to the violence of the fire thereby separates it into pure and refulgent Gold and Lead (which driven off together with the Dross of the Gold is thence call'd *Lythargyrium Auri*) can any man doubt that sees these two so differing substances separated from the Mass, that they were existent in it before it was committed to the fire.

I should (replies *Carneades*) allow your Argument to prove something, if, as Men see the Refiners commonly take before hand both Lead and Gold to make the Mass you speak of, so we did see Nature pull down a parcell of the Element of Fire, that is fancy'd to be plac'd I know not how many thousand Leagues off, contiguous to the Orb of the Moon, and to blend it with a quantity of each of the three other Elements, to compose every mixt Body, upon whose Resolution the

Fire

ire presents us with Fire, and Earth, nd the rest. And let me add, *Philopo-us*, that to make your Reasoning co-ent, it must be first prov'd, that the fire o's only take the Elementary Ingredi-nts asunder, without otherwise alter-ng them. For else 'tis obvious, that Bo-ies may afford substances which were ot pre-existent in them; as Flesh too ong kept produces Magots, and old Cheese Mites, which I suppose you will ot affirm to be Ingredients of those Bo-lies. Now that fire do's not alwayes barely separate the Elementary parts, but sometimes at least alter also the In-gredients of Bodies, if I did not expect ere long a better occasion to prove it, I might make probable out of your very Instance, wherein there is nothing Ele-mentary separated by the great violence of the Refiners fire: the Gold and Lead which are the two Ingredients separa-ted upon the *Analysis* being confessedly yet perfectly mixt Bodies, and the Li-tharge being Lead indeed; but such Lead as is differing in consistence and other Qualities from what it was before. To which I must add that I have some-times seen, and so questionless have you much

much oftner, ſome parcells of Glaſs adhering to the Teſt or Cuppel, and this Glaſs though Emergent as well as the Gold or Litharge upon your Analyſis you will not I hope allow to have been a third Ingredient of the Maſs out of which the fire produc'd it.

Both *Philoponus* and *Themiſtius* were about to reply, when *Eleutherius* apprehending that the Proſecution of this Diſpute would take up time, which might be better employ'd, thought fit to prevent them by ſaying to *Carneades*: You made at leaſt half a Promiſe, when you firſt propos'd this Objection, that you would not (now at leaſt) inſiſt on it, nor indeed does it ſeem to be of abſolute neceſſity to your cauſe, that you ſhould. For though you ſhould grant that there are Elements, it would not follow that there muſt be preciſely four. And therefore I hope you will proceed to acquaint us with your other and more conſiderable Objections againſt *Themiſtius*'s Opinion, eſpecially ſince there is ſo great a Diſproportion in Bulke betwixt the Earth, Water and Air, on the one part, and thoſe little parcells of reſembling ſubſtances, that the fire ſepa-

rates

ates from *Concretes* on the other part, hat I can scarce think that you are serious, when to lose no advantage against our Adversary, you seem to deny it to e rational, to conclude these great simle Bodies to be the Elements, and not he Products of compounded ones.

What you alledge (replies *Carnedes*) of the Vastness of the Earth and Vater, has long since made me willing o allow them to be the greatest and hief Masses of Matter to be met with ere below: But I think I could shew ou, if You would give me leave, that his will prove only that the Elements, s You call them, are the chief Bodies hat make up the neighbouring part of he World, but not that they are such Ingredients as every mixt Body must consist of. But since You challenge me of something of a Promise, though it be not an entire one, Yet I shall willingly performe it. And indeed I intended not, when I first mention'd this Objection, to insist on it at present against *Themistius*, (as I plainly intimated in my way of proposing it) being only desirous to lett you see, that though I discern'd my Advantages, yet

I was willing to forego some of them rather than appear a rigid Adversary of a Cause so weak, that it may with safety be favourably dealt with. But I must here profess, and desire You to take Notice of it, that though I pass on to another Argument, it is not because I think this first invalid. For You will find in the Progress of our Dispute, that I had some reason to question the very way of Probation imploy'd both by Peripateticks and Chymists to evince the being and number of the Elements. For that there are such, and that they are wont to be separated by the Analysis made by Fire, is indeed taken for granted by both Parties, but has not (for ought I know) been so much as plausibly attempted to be proved by either. Hoping then that when we come to that part of our Debate, wherein Considerations relating to this Matter are to be treated of, you will remember what I have now said, and that I do rather for a while suppose, than absolutely grant the truth of what I have question'd, I will proceed to another Objection.

And hereupon *Eleutherius* having pro-

promis'd him not to be unmindfull, when time should serve, of what he had declar'd.

I consider then (saies *Carneades*) in the next place, that there are divers Bodies out of which *Themistius* will not prove in haste, that there can be so many Elements as four extracted by the Fire. And I should perchance trouble him if I should ask him what Peripatetick can shew us, (I say not, all the four Elements, for that would be too rigid a Question, but) any one of them extracted out of Gold by any degree of Fire whatsoever. Nor is Gold the only Bodie in Nature that would puzzle an *Aristotelian* (that is no more) to analyze by the Fire into Elementary Bodies, since, for ought I have yet observ'd both Silver and calcin'd *Venetian* Talck, and some other Concretes, not necessary here to be nam'd, are so fixt, that to reduce any of them into four Heterogeneous Substances has hitherto prov'd a Task much too hard, not only for the Disciples of *Aristotle*, but those of *Vulcan* at least, whilst the latter have employ'd only Fire to make the *Analysis*.

The next Argument (continues *Carneades*) that I shall urge against *Themistius*'s Opinion shall be this, That as there are divers Bodies whose *Analysis* by Fire cannot reduce them into so many Heterogeneous Substances or Ingredients as four, so there are others which may be reduc'd into more, as the Blood (and divers other parts) of Men and other Animals, which yield when analyz'd five distinct Substances Phlegme, Spirit, Oyle, Salt and Earth, as Experience has shewn us in distilling Mans Blood, Harts-Horns, and divers other Bodies that belonging to the Animal-Kingdom abound with not uneasily sequestrable Salt.

THE SCEPTICAL CHYMIST

The First Part.

I Am (saies *Carneades*) so unwilling to deny *Eleutherius* any thing, that though, before the rest of the Company I am resolv'd to make good the part I have undertaken of a Sceptick; yet I shall readily, since you will have it so, lay aside for a while the Person of an Adversary to the Peripateticks and Chymists; and before I acquaint you with my Objections against their Opinions, acknowledge to you what may be (whether truly or not) tolerably enough added, in favour of a certain number of Principles of mixt Bodies, to that grand and known Argument from the *Analysis*

of compound Bodies, which I may poſſibly hereafter be able to confute.

And that you may the more eaſily Examine, and the better Judge of what I have to ſay, I ſhall caſt it into a pretty number of diſtinct Propoſitions, to which I ſhall not premiſe any thing; becauſe I take it for granted, that you need not be advertis'd, that much of what I am to deliver, whether for or againſt a determinate number of Ingredients of mixt Bodies, may be indifferently apply'd to the four Peripatetick Elements, and the three Chymical Principles, though divers of my Objections will more peculiarly belong to theſe laſt nam'd, becauſe the Chymical *Hypotheſis* ſeeming to be much more countenanc'd by Experience than the other, it will be expedient to inſiſt chiefly upon the diſproving of that; eſpecially ſince moſt of the Arguments that are imploy'd againſt it, may, by a little variation, be made to conclude, at leaſt as ſtrongly againſt the leſs plauſible, *Ariſtotelian* Doctrine.

To proceed then to my Propoſitions I ſhall begin with this, That

It seems not absurd to conceive that at the first Production of mixt Bodies, *the Universal Matter whereof they among other Parts of the Universe consisted, was actually divided into little Particles of several sizes and shapes variously mov'd.* Propos. I.

This (saies *Carneades*) I suppose you will easily enough allow. For besides that which happens in the Generation, Corruption, Nutrition, and wasting of Bodies, that which we discover partly by our *Microscopes* of the extream littleness of even the scarce sensible parts of Concretes; and partly by the Chymical Resolutions of mixt Bodies, and by divers other Operations of Spagyrical Fires upon them, seems sufficiently to manifest their consisting of parts very minute and of differing Figures. And that there does also intervene a various local Motion of such small Bodies, will scarce be denied; whether we chuse to grant the Origine of Concretions assign'd by *Epicurus*, or that related by *Moses*. For the first, as you well know, supposes not only all-

mixt Bodies, but all others to be pro duc'd by the various and casual occursi ons of Atomes, moving themselves t and fro by an internal Principle in th Immense or rather Infinite *Vacuum* And as for the inspir'd Historian, He informing us that the great and Wis Author of Things did not immediatel create Plants, Beasts, Birds, &c. but pro duc'd them out of those portions of th pre-existent, though created, Matter that he calls Water and Earth, allow us to conceive, that the constituent Par ticles whereof these new Concrete were to consist, were variously move in order to their being connected int the Bodies they were, by their variou Coalitions and Textures, to compose.

But (continues *Carneades*) presumin that the first Proposition needs no be longer insisted on, I will pass on t the second, and tell you that

Propos. II. *Neither is it possible that of these mi nute Particles divers of the smallest an neighbouring ones were here and ther associated into minute Masses or Clu sters, and did by their Coalitions consti tute great store of such little primary Concretion.*

Concretions or Masses as were not easily dissipable into such Particles as compos'd them.

To what may be deduc'd, in favour of his Assertion from the Nature of the Thing it self, I will add something out of Experience, which though I have not known it used to such a purpose, seems to me more fairly to make out that there may be Elementary Bodies, than the more questionable Experiments of Peripateticks and Chymists prove that there are such. I consider then that Gold will mix and be colliquated not only with Silver, Copper, Tin and Lead, but with Antimony, *Regulus Martis* and many other Minerals, with which it will compose Bodies very differing both from Gold, and the other Ingredients of the resulting Concretes. And the same Gold will also by common *Aqua Regis*, and (I speak it knowingly) by divers other *Menstruums* be reduc'd into a seeming Liquor, in so much that the Corpuscles of Gold will, with those of the *Menstruum*, pass through Cap-Paper, and with them also coagulate into a Chrystalline Salt. And I have further try'd, that

with a small quantity of a certain Saline Substance I prepar'd, I can easily enough sublime Gold into the form of red Chrystals of a considerable length; and many other wayes may Gold be disguis'd, and help to constitute Bodies of very differing Natures both from It and from one another, and nevertheless be afterward reduc'd to the self-same Numerical, Yellow, Fixt, Ponderous and Malleable Gold it was before its commixture. Nor is it only the fixedst of Metals, but the most fugitive, that I may employ in favour of our Proposition: for Quicksilver will with divers Metals compose an *Amalgam*, with divers *Menstruums* it seems to be turn'd into a Liquor, with *Aqua fortis* it will be brought into either a red or white Powder or precipitate, with Oyl of Vitriol into a pale Yellow one, with Sulphur it will compose a blood-red and volatile Cinaber, with some Saline Bodies it will ascend in form of a Salt which will be dissoluble in water; with *Regulus* of Antimony and Silver I have seen it sublim'd into a kinde of Crystals, with another Mixture I reduc'd it into a malleable Body, into a hard and brittle Substance by another: And some

ome there are who affirm, that by proper Additaments they can reduce Quicksilver into Oyl, nay into Glass, to mention no more. And yet out of all these exotick Compounds, we may recover the very same running Mercury that was the main Ingredient of them, and was so disguis'd in them. Now the Reason (proceeds *Carneades*) that I have represented these things concerning Gold and Quicksilver, is, That it may not appear absurd to conceive, that such little primary Masses or Clusters; as our Proposition mentions, may remain undissipated, notwithstanding their entring into the composition of various Concretions, since the Corpuscle of Gold and Mercury, though they be not primary Concretions of the most minute Particles of matter, but confessedly mixt Bodies, are able to concurre plentifully to the composition of several very differing Bodies, without losing their own Nature or Texture, or having their cohesion violated by the divorce of their associated parts or Ingredients.

Give me leave to add (saies *Eleutherius*) on this occasion, to what you now observ'd, that as confidently as some Chymists

Chymists, and other modern Innovators in Philosophy are wont to object against the Peripateticks, That from the mixture of their four Elements there could arise but an inconsiderable variety of compound Bodies; yet if the *Aristotelians* were but half as well vers'd in the works of Nature as they are in the Writings of their Master, the propos'd Objection would not so calmly triumph, as for want of Experiments they are fain to suffer it to do. For if we assigne to the Corpuscles, whereof each Element consists, a peculiar size and shape, it may easily enough be manifested, That such differingly figur'd Corpuscles may be mingled in such various Proportions, and may be connected so many several waies, that an almost incredible number of variously qualified Concretes may be compos'd of them. Especially since the Corpuscles of one Element may barely, by being associated among themselves, make up little Masses of differing size and figure from their constituent parts: and since also to the strict union of such minute Bodies there seems oftentimes nothing requisite, besides the bare Contact of a great part of their Surfaces.

And

And how great a variety of *Phænomena* the same matter, without the addition of any other, & only several ways disposʼd or contexʼd, is able to exhibit, may partly appear by the multitude of differing Engins which by the contrivances of skilful Mechanilians, and the dexterity of expert Workmen, may be made of Iron alone. But in our present case being allowʼd to deduce compound Bodies from our very differently qualified sorts of matter, he who shall but consider what you freshly took notice of concerning the new Concretes resulting from the mixture of incorporated Minerals, will scarce doubt but that the four Elements managʼd by Natures Skill may afford a multitude of differing Compounds.

I am thus far of your minde (saies *Carneades*) that the *Aristotelians* might with probability deduce a much greater number of compound Bodies from the mixture of their four Elements, than according to their present *Hypothesis* they can, if instead of vainly attempting to deduce the variety and proprieties of all mixt Bodies from the Combinations & Temperaments of the four Elements, as they are (among them) endowd with

with the four first Qualities, they had endeavoured to do it by the Bulk and Figure of the smallest parts of those supposed Elements. For from these more Catholick and Fruitfull Accidents of the Elementary matter may spring a great variety of Textures, upon whose Account a multitude of compound Bodies may very much differ from one another. And what I now observe touching the four Peripatetick Elements, may be also applyed, *mutatis mutandis*, (as they speak) to the Chymical Principles. But (to take notice of that by the by) both the one and the other, must, I fear, call in to their assistance something that is not Elementary, to excite or regulate the motion of the parts of the matter, and dispose them after the manner requisite to the Constitution of particular Concretes. For that otherwise they are like to give us but a very imperfect account of the Origine of very many mixt Bodies, It would, I think, be no hard matter to perswade you, if it would not spend time, and were no Digression, to examine, what they are wont to alledge of the Origine of the Textures and Qualities of mixt Bodies, from

on a certain ſubſtantial Form, whoſe rigination they leave more obſcure an what it is aſſum'd to explicate.

But to proceed to a new Propoſition.

ſhall not peremptorily deny, that from most of ſuch mixt Bodies as partake either of Animal or Vegetable Nature, there may by the Help of the Fire, be actually obtain'd a determinate number (whether Three, Four, or Five, or fewer or more) of Subſtances, worthy of differing Denominations. Propoſ. III.

Of the Experiments that induce me o make this Conceſſion, I am like to ave occaſion enough to mention ſeveal in the proſecution of my Diſcourſe. And therefore, that I may not hereafter be oblig'd to trouble You and my ſelf with needleſs Repetitions, I ſhall now only deſire you to take notice of ſuch Experiments, when they ſhall be mention'd, and in your thoughts referre them hither.

To theſe three Conceſſions I have but this Fourth to add, That

Propos. IV. *It may likewise be granted, that those distinct Substances, which Concretes generally either afford or are made up of may without very much Inconvenience be call'd the Elements or Principles of them.*

When I said, *without very much Inconvenience*, I had in my Thoughts that sober Admonition of *Galen*, *Cum de re constat, de verbis non est Litigandum.* And therefore also I scruple not to say *Elements* or *Principles*; partly because the Chymists are wont to call the Ingredients of mixt Bodies, *Principles*, as the *Aristotelians* name them *Elements*; I would here exclude neither. And, partly, because it seems doubtfull whether the same Ingredients may not be call'd *Principles*; as not being compounded of any more primary Bodies; and *Elements* in regard that all mixt Bodies are compounded of them. But I thought it requisite to limit my Concession by premising the words, *very much*, to the word *Inconvenience*, because that though the Inconvenience of calling the distinct Substances, mention'd in the Proposition *Elements* or *Principles*, be not very great,

reat, yet that it is Impropriety of peech, and consequently in a matter of his moment not to be altogether over-ook'd, You will perhaps think, as well as , by that time you shall have heard the ollowing part of my Discourse, by hich you will best discern what Con-ruction to put upon the former Propo-tions, and how far they may be look'd pon, as things that I concede as true, & ow far as things I only represent as spe-ious enough to be fit to be consider'd. And now *Eleutherius* (continues *Carne-des*) I must resume the person of a Sce-tick, and as such, propose some part of hat may be either dislik't, or at least oubted of in the common *Hypotheses* of ie Chymists. which if I examine with a ttle the more freedom, I hope I need ot desire you (a person to whom I have ie Happiness of being so well known) o look upon it as something more suit-ble to the Employment whereto the ompany has, for this Meeting, doom'd ie; than either to my Humour or my ustom.

Now though I might present you ma-y things against the Vulgar Chymical pinion of the three Principles, and the

Ex-

Experiments wont to be alleg'd as Demonstrations of it, yet those I shall at present offer you may be conveniently enough comprehended in four Capital Considerations; touching all which I shall only premise this in general, That since it is not my present Task so much to assert an *Hypothesis* of my own, as to give an Account wherefore I suspect the truth of that of the Chymists, it ought not to be expected that all my Objections should be of the most cogent sort, since it is reason enough to Doubt of a propos'd Opinion, that there appears no cogent Reason for it.

To come then to the Objections themselves; I consider in the first place, That notwithstanding what common Chymists have prov'd or taught, it may reasonably enough be Doubted, how far and in what sence, Fire ought to be esteem'd the genuine and universal Instrument of analyzing mixt Bodies.

This Doubt, you may remember, was formerly mention'd, but so transiently discours'd of, that it will now be fit to insist upon it; And manifest that it was not so inconsiderately propos'd as our Adversaries then imagin'd.

But

But, before I enter any further into his Disquisition, I cannot but here take notice, that it were to be wish'd, our Chymists had clearly inform'd us what kind of Division of Bodies by Fire must determine the number of the Elements: or it is nothing near so easy as many seem to think, to determine distinctly the Effects of Heat, as I could easily manifest, if I had leasure to shew you how much the Operations of Fire may be diversify'd by Circumstances. But not wholly to pass by a matter of this Importance, I will first take notice to you, that *Guajacum* (for instance) burnt with an open Fire in a Chimney, is sequestred into Ashes and Soot, whereas the same Wood distill'd in a Retort does yield its other Heterogeneities, (to use the *Helmontian* expression) and is resolv'd into Oyl, Spirit, Vinegar, Water and Charcoal; the last of which to be reduc'd into Ashes, requires the being farther calcin'd than it can be in a close Vessel: Besides having kindled Amber, and held a clean Silver Spoon, or some other Concave and smooth Vessel over the Smoak of its Flame, I observ'd the Soot into which that Fume condens'd,

to be very differing from any thing that I had obſerv'd to proceed from the ſteam of Amber purpoſely (for that is not uſual) diſtilled *per ſe* in cloſe Veſſels. Thus having, for Tryals ſake, kindled Camphire and catcht the Smoak that copiouſly aſcended out of the Flame, it condens'd into a Black and unctuous Soot, which would not have been gueſs'd by the Smell or other Properties to have proceeded from Camphire: whereas having (as I ſhall otherwhere more fully declare) expos'd a quantity of that Fugitive Concrete to a gentle heat in a cloſe Glaſs-Veſſel, it ſublim'd up without ſeeming to have loſt any thing of its whiteneſs, or its Nature both which it retain'd, though afterwards I ſo encreaſed the Fire as to bring it to Fuſion. And, beſides Camphire there are divers other Bodies (that I elſewhere name) in which the heat in cloſe Veſſels is not wont to make any ſeparation of Heterogeneities, but only a comminution of Parts, thoſe that riſe firſt being Homogeneal with the others though ſubdivided into ſmaller Particles whence Sublimations have been ſtiled *The Peſtles of the Chymiſts.* But not here

to

to mention what I elsewhere take notice of, concerning common Brimstone once or twice sublim'd, that expos'd to a moderate Fire in Subliming-Pots, it rises all into dry, and almost tastless, Flowers; Whereas being expos'd to a naked Fire it affords store of a Saline and Fretting Liquor: Not to mention this, I say, I will further observe to you, that as it is considerable in the *Analysis* of mixt Bodies, whether the Fire act on them when they are expos'd to the open Air, or shut up in close Vessels, so is the degree of Fire, by which the *Analysis* is attempted, of no small moment. For a milde *Balneum* will sever unfermented Blood (for instance) but into Phlegme and *Caput mortuum*, the latter whereof (which I have sometimes had) hard, brittle, and of divers Colours, (transparent almost like Tortoise-shell) press'd by a good Fire in a Retort yields a Spirit, an Oyl or two, and a volatile Salt, besides another *Caput mortuum*. It may be also pertinent to our present Designe, to take notice of what happens in the making and distilling of Sope; for by one degree of Fire the Salt, the Water, and the Oyl or Grease, whereof that factitious

Concrete is made up, being boyl'd up together are easily brought to mingle and incorporate into one Mass; but by another and further degree of Heat the same Mass may be again divided into an oleagenous, and aqueous, a Saline, and an Earthy part. And so we may observe that impure Silver and Lead being expos'd together to a moderate Fire will thereby be colliquated into one Mass, and mingle *per minima*, as they speak; whereas a much vehementer Fire will drive or carry off the baser Metals (I mean the Lead, and the Copper or other Alloy) from the Silver, though not, for ought appears, separate them from one another. Besides, when a Vegetable abounding in fixt Salt is analyz'd by a naked Fire, as one degree of Heat will reduce it into Ashes, (as the Chymists themselves teach us) so, by only a further degree of Fire, those Ashes may be vitrified and turn'd into Glass. I will not stay to examine how far a meere Chymist might on this occasion demand, If it be lawful for an *Aristotelian* to make Ashes, (which he mistakes for meere Earth) pass for an Element, because by one degree of Fire it may be pro-

produc'd, why a Chymist may not upon the like Principle argue, that Glass is one of the Elements of many Bodies, because that also may be obtain'd from them, barely by the Fire? I will not, I say, lose time to examine this, but observe, that by a Method of applying the Fire, such similar Bodies may be obtain'd from a Concrete, as Chymists have not been able to separate; either by barely burning it in an open Fire, or by barely distilling it in close Vessels. For to me it seems very considerable, and I wonder that men have taken so little notice of it, that I have not by any of the common wayes of Distillation in close Vessels, seen any separation made of such a volatile Salt as is afforded us by Wood, when that is first by an open Fire divided into Ashes and Soot, and that Soot is afterwards plac'd in a strong Retort, and compell'd by an urgent Fire to part with its Spirit, Oyl and Salt; for though I dare not peremptorily deny, that in the Liquors of *Guajacum* and other Woods distill'd in Retorts after the common manner, there may be Saline parts, which by reason of the Analogy may pretend to the name of some kinde of

volatile Salts; yet queſtionleſs there is a great diſparity betwixt ſuch Salts and that which we have ſometimes obtain'd upon the firſt Diſtillation of Soot (though for the moſt part it has not been ſeparated from the firſt or ſecond Rectification, and ſometimes not till the third) For we could never yet ſee ſeparated from Woods analyz'd only the vulgar way in cloſe veſſels any volatile Salt in a dry and Saline form, as that of Soot, which we have often had very Chryſtalline and Geometrically figur'd. And then, whereas the Saline parts of the Spirits of *Guajacum*, &c. appear upon diſtillation ſluggiſh enough, the Salt of Soot ſeems to be one of the moſt volatile Bodies in all Nature; and if it be well made will readily aſcend with the milde heat of a Furnace, warm'd only by the ſingle Wieck of a Lamp, to the top of the higheſt Glaſs Veſſels that are commonly made uſe of for Diſtillation: and beſides all this, the taſte and ſmell of the Salt of Soot are exceeding differing from thoſe of the Spirits of *Guajacum*, &c. and the former not only ſmells & taſtes much leſs like a vegetable Salt, than like that of Harts-horn, and other Animal

Animal Concretes; but in divers other Properties seems more of Kinne to the Family of Animals, than to that of vegetable Salts, as I may elsewhere (God permitting) have an occasion more particularly to declare. I might likewise by some other Examples manifest, That the Chymists, to have dealt clearly, ought to have more explicitly and particularly declar'd by what Degree of Fire, and in what manner of Application of it, they would have us Judge a Division made by the Fire to be a true *Analysis* into their Principles, and the Productions of it to deserve the name of Elementary Bodies. But it is time that I proceed to mention the particular Reasons that incline me to Doubt, whether the Fire be the true and universal Analyzer of mixt Bodies; of which Reasons what has been already objected may pass for one.

In the next place I observe, That there are some mixt Bodies from which it has not been yet made appear, that any degree of Fire can separate either Salt or Sulphur or Mercury, much less all the Three. The most obvious Instance of this Truth is Gold, which is a Body so fix'd, and wherein the Elementary

Ingredients (if it have any) are so firmly united to each other, that we finde not in the operations wherein Gold is expos'd to the Fire, how violent soever, that it does discernably so much as lose of its fixedness or weight, so far is it from being dissipated into those Principles, whereof one at least is acknowledged to be Fugitive enough; and so justly did the Spagyricall Poet somewhere exclaim,

Cuncta adeo miris illic compagibus hærent.

And I must not omit on this occasion to mention to you, *Eleutherius*, the memorable Experiment that I remember I met with in * *Gasto Claveus*, who, though a Lawyer by Profession, seems to have had no small Curiosity and Experience in Chymical affairs: He relates then, that having put into one small Earthen Vessel an Ounce of the most pure Gold, and into another the like weight of pure Silver, he plac'd them both in that part of a Glass-house Furnace wherein the Workmen keep their Metal, (as our English Artificers call their Liquid Glass) continually melted, and that having there kept both the Gold and the

* *Gasto Claveus* Apolog. Argur. & Chrysopera.

he Silver in constant Fusion for two
Moneths together, he afterwards took
hem out of the Furnace and the Vessels,
nd weighing both of them again, found
hat the Silver had not lost above a 12th
part of its weight, but the Gold had not
of his lost any thing at all. And though
our Author endeavours to give us of this
Scholastick Reason, which I suppose
ou would be as little satisfied with, as
was when I read it; yet for the mat-
er of Fact, which will serve our present
urne, he assures us, that though it be
strange, yet Experience it self taught it
im to be most true.

And though there be not perhaps any
other Body to be found so perfectly fix'd
as Gold, yet there are divers others so
fix'd or compos'd, at least of so strictly
united parts, that I have not yet observ'd
the Fire to separate from them any one
of the Chymists Principles. I need not
tell you what Complaints the more
Candid and Judicious of the Chymists
themselves are wont to make of those
Boasters that confidently pretend, that
they have extracted the Salt or Sulphur
of Quicksilver, when they have disguis'd
it by Additaments, wherewith it re-
sembles

ſembles the Concretes whoſe Names are given it; whereas by a skilfull and rigid *Examen*, it may be eaſily enough ſtript of its Diſguiſes, and made to appear again in the priſtine form of running Mercury. The pretended Salts and Sulphurs being ſo far from being Elementary parts extracted out of the Bodie of Mercurie, that they are rather (to borrow a terme of the Grammarians) De-compound Bodies, made up of the whole Metal and the *Menſtruum*, or other Additaments imploy'd to diſguiſe it. And as for Silver, I never could ſee any degree of Fire make it part with any of its three Principles. And though the Experiment lately mentioned from *Claveus* may beget a Suſpition that Silver may be diſſipated by Fire, provided it be extreamly violent and very laſting; yet it will not neceſſarily follow, that becauſe the Fire was able at length to make the Silver loſe a little of its weight, it was therefore able to diſſipate it into its Principles. For firſt I might alledge that I have obſerv'd little Grains of Silver to lie hid in the ſmall Cavities (perhaps glas'd over by a vitrifying heat) in Crucibles, wherein Silver has been long kept in Fuſion, whence

hence some Goldsmiths of my Acquaintance make a Benefit by grinding ich Crucibles to powder, to recover out f them the latent particles of Silver. nd hence I might argue, that perhaps *laveus* was mistaken, and imagin'd that ilver to have been driven away by the ire, that indeed lay in minute parts hid n his Crucible, in whose pores so small quantity as he mist of so ponderous Bodie might very well lie conceal'd.

But Secondly, admitting that some parts of the Silver were driven away by he violence of the Fire, what proof is here that it was either the Salt, the Sulphur, or the Mercury of the Metal, and not rather a part of it homogeneous to what remain'd? For besides, that the Silver that was left seem'd not sensibly alter'd, which probably would have appear'd, had so much of any one of its Principles been separated from it; We finde in other Mineral Bodies of a less permanent nature than Silver, that the Fire may divide them into such minute parts, as to be able to carry them away with its self, without at all destroying their Nature. Thus we see that in the refining

fining of Silver, the Lead that is mix'd with it (to carry away the Copper or other ignoble Mineral that embaſes the Silver) will, if it be let alone, in time evaporate away upon the Teſt; but if (as is moſt uſual amongſt thoſe that refine great quantities of Metals together) the Lead be blown off from the Silver by Bellowes, that which would elſe have gone away in the Form of unheeded ſteams, will in great part be collected not far from the Silver, in the Form of a Darkiſh Powder or Calx; which, becauſe it is blown off from Silver, they call Litharge of Silver. And thus *Agricola* in divers places informs us, when Copper, or the Oare of it is colliquated by the violence of the Fire with *Cadmia*, the Sparks, that in great multitudes do fly upwards, do ſome of them, ſtick to the vaulted Roofs of the Furnaces, in the form of little and (for the moſt part) White Bubbles, which therefore the Greeks, and, in imitation of them, our Druggiſters call *Pompholyx*: and others more heavy partly adhere to the ſides of the Furnace, and partly (eſpecially if the Covers be not kept upon the Pots) fall to the Ground, and by reaſon of their

Agricola de Natura Foſſil. Lib. 9. Cap. 11. & 12.

Aſhy

ashy Colour as well as Weight were alled by the same Greeks σποδὸς, which, need not tell you, in their Language gnifies Ashes. I might add, that I have ot found that from Venetian Talck (I y Venetian because I have found other inds of that Mineral more open) from ne *Lapis Ossifragus*, (which the Shops all *Ostiocolla*) from *Muscovia* Glass, from ure and Fusible Sand (to mention now o other Concretes) those of my Acuaintance that have try'd, have been ale by the Fire to separate any one of the lypostatical Principles; which you will he less scruple to believe, if you consiler that Glass may be made by the bare Colliquation of the Salt and Earth remaining in the Ashes of a burnt Plant, nd that yet common Glass, once made, loes so far resist the violence of the Fire, hat most Chymists think it a Body nore undestroyable than Gold it self. For if the Artificer can so firmly unite uch comparative gross Particles as those of Earth and Salt that make up common Ashes, into a Body indissoluble by Fire, why may not Nature associate in divers Bodies the more minute Elementary Corpuscles she has at hand too firmly to

let

let them be ſeparable by the Fire? A
on this Occaſion, *Eleutherius*, give
leave to mention to you two or th
ſlight Experiments, which will, I ho
be found more pertinent to our pre
Diſcourſe, than at firſt perhaps they v
appear. The firſt is, that, having (
Tryals ſake) put a quantity of that I
gitive Concrete, Camphire, into a G
Veſſel, and plac'd it in a gentle Heat
found it (not leaving behinde, accord
to my Eſtimate, not ſo much as
Grain) to ſublime to the Top of
Veſſel into Flowers: Which in Whi
neſs, Smell, &c. ſeem'd not to dif
from the Camphire it ſelf. Anot
Experiment is that of *Helmont*, whe
ſeveral places affirms, That a Coal ke
in a Glaſs exactly clos'd will never
calcin'd to Aſhes, though kept never
long in a ſtrong Fire: To countenan
which I ſhall tell you this Tryal of
own, That having ſometimes diſtil
ſome Woods, as particularly Box, whi
our *Caput mortuū* remain'd in the Reto
it continued black like Charcoal, thou
the Retort were Earthen, and kept re
hot in a vehement Fire; but as ſoon
ever it was brought out of the cand
Ve

'effel into the open Air, the burning :oals did haſtily degenerate or fall a-nder, without the Aſſiſtance of any ew Calcination, into pure white Aſhes. nd to theſe two I ſhall add but this ob-ious and known Obſervation, that com-ıon Sulphur (if it be pure & freed from s Vinegar) being leaſurely ſublim'd in loſe Veſſels, riſes into dry Flowers, 'hich may be preſently melted into a ›odie of the ſame Nature with that 'hich afforded them. Though, if Brim-:one be burnt in the open Air, it gives, ou know, a penetrating Fume, which eing caught in a Glaſs-Bell condenſes nto that acid Liquor called Oyl of Sul-›hur *per Campanam*. The uſe I would nake of theſe Experiments collated with vhat I lately told you out of *Agricola* is his, That even among the Bodies that ıre not fixt, there are divers of ſuch a Texture, that it will be hard to make it ıppear, how the Fire, as Chymiſts are vont to imploy it, can reſolve them into Elementary Subſtances. For ſome Bodies being of ſuch a Texture that the Fire can drive them into the cooler and leſs hot part of the Veſſels wherein they are in-cluded, and if need be, remove them from

place

place to place to fly the greatest heat; more easily than it can divorce their Elements(especially without the Assistance of the Air)we see that our Chymists cannot Analyze them in close Vessels,and of other compound Bodies the open Fire can as little separate the Elements. For what can a naked Fire do to Analyze a mixt Bodie, if its component Principles be so minute,and so strictly united, that the Corpuscles of it need less heat to carry them up,than is requisite to divide them into their Principles. So that of some Bodies the Fire cannot in close Vessels make any *Analysis* at all; and others will in the open Air fly away in the Forms of Flowers or Liquors,before the Heat can prove able to divide them into their Principles. And this may hold, whether the various similar parts of a Concrete be combin'd by Nature or by Art; For in factitious *Sal Armoniack*, we finde the common and the Urinous Salts so well mingled, that both in the open Fire, and in subliming Vessels they rise together,as one *Salt*,which seems in such Vessels irresoluble by Fire alone. For I can shew you *Sal Armoniack* which after the ninth *Sublimation* does still retain its com-

compounded Nature. And indeed I carce know any one Mineral, from which by Fire alone Chymists are wont o sever any Substance simple enough to eserve the name of an Element or Prinple. For though out of native Cinnaber ney distill Quicksilver, and though from any of those Stones that the Ancients alled *Pyrites* they sublime Brimstone, et both that Quicksilver and this Sulhur being very often the same with the ommon Minerals that are sold in the hops under those names, are themelves too much compounded Bodies to ass for the Elements of such. And thus uch, *Eleutherius*, for the *S*econd Argument that belongs to my First Consideration; the others I shall the lesse insist n, because I have dwelt so long upon his.

Proceed we then in the next place to onsider, That there are divers *S*eparaions to be made by other means, which ither cannot at all, or else cannot so ell be made by the Fire alone. When old and Silver are melted into one lass, it would lay a great Obligation pon Refiners and Goldsmiths to teach hem the Art of separating them

by the Fire, without the trouble and charge they are fain to be at to sever them. Whereas they may be very easily parted by the Affusion of Spirit of Nitre or *Aqua fortis*; which the French therefore call *Eau de Depart*: So likewise the Metalline part of Vitriol will not be so easily and conveniently separated from the Saline part even by a violent Fire, as by the Affusion of certain Alkalizate Salts in a liquid Form upon the Solution of Vitriol made in common water. For thereby the acid Salt of the Vitriol leaving the Copper it had corroded to joyn with the added Salts, the Metalline part will be precipitated to the bottom almost like Mud. And that I may not give Instances only in De-compound Bodies, I will add a not uselesse one of another kinde. Not only Chymists have not been able (for ought is vulgarly known) by Fire alone to separate true Sulphur from Antimony; but though you may finde in their Books many plausible Processes of Extracting it, yet he that shall make as many fruitless Tryals as I have done to obtain it by, most of them will, I suppose, be easily perswaded, that the Productions of such

Processes

Proceſſes are Antimonial Sulphurs rather in Name than Nature. But though Antimony ſublim'd by its ſelf is reduc'd out to a volatile Powder, or Antimonial Flowers, of a compounded Nature like the Mineral that affords them: yet I remember that ſome years ago I ſublim'd out of Antimony a Sulphur, and that in greater plenty than ever I ſaw obtain'd from that Mineral, by a Method which I ſhall therefore acquaint you with, becauſe Chymiſts ſeem not to have taken notice, of what Importance ſuch Experiments may be in the Indagation of the Nature, and eſpecially of the Number of the Elements. Having then purpoſely for Tryals ſake digeſted eight Ounces of good and well powder'd Antimony with twelve Ounces of Oyl of Vitriol in a well ſtopt Glaſs-Veſſel for about ſix or ſeven Weeks; and having caus'd the Maſs (grown hard and brittle) to be diſtill'd in a Retort plac'd in Sand, with a ſtrong Fire; we found the Antimony to be ſo opened, or alter'd by the *Menſtruum* wherewith it had been digeſted, that whereas crude Antimony, forc'd up by the Fire, ariſes only in Flowers, our Antimony thus handled afforded us

partly in the Receiver, and partly in the Neck and at the Top of the Retort, about an Ounce of Sulphur, yellow and brittle like common Brimstone, and of so *Sulphureous* a smell, that upon the unluting the Vessels it infected the Room with a scarce supportable stink. And this Sulphur, besides the Colour and *Smell*, had the perfect inflamability of common Brimstone, and would immediately kindle (at the Flame of a Candle) and burn blew like it. And though it seem'd that the long digestion wherein our Antimony and *Menstruum* were detain'd, did conduce to the better unlocking of the Mineral, yet if you have not the leasure to make so long a Digestion you may by incorporating with powder'd Antimony a convenient Quantity of Oyl of Vitriol, and committing them immediately to Distillation, obtain a little *Sulphur* like unto the common one, and more combustable than perhaps you will at first take notice of. For I have observ'd, that though (after its being first kindled) the Flame would some times go out too soon of its self, if the same Lump of *Sulphur* were held again to the Flame of a Candle, it would be re

rekindled and burn a pretty while, not only after the second, but after the third or fourth accension. You, to whom I think I shewed my way of discovering something of *Sulphureous* in Oyl of Vitriol, may perchance suspect, *Eleutherius*, either that this *Substance* was some Venereal *Sulphur* that lay hid in that Liquor, and was by this operation only reduc'd into a manifest Body; or else that it was a compound of the unctuous parts of the Antimony, and the *Saline* ones of the Vitriol, in regard that (as *Gunther* informs us) divers learned men would have *Sulphur* to be nothing but a mixture made in the Bowels of the Earth of Vitriolate *Spirits* and a certain combustible *Substance*. But the Quantity of *Sulphur* we obtain'd by Digestion was much too great to have been latent in the Oyl of Vitriol. And that Vitriolate *Spirits* are not necessary to the Construction of such a *Sulphur* as ours, I could easily manifest, if I would acquaint you with the several wayes by which I have obtain'd, though not in such plenty, a *Sulphur* of Antimony, colour'd and combustible like common Brimstone. And though I am not now minded

Lib. 1 Observat. Cap. 6.

to discover them, yet I shall tell you, that to satisfie some Ingenious Men, that distill'd Vitriolate Spirits are not necessary to the obtaining of such a *Sulphur* as we have been considering, I did by the bare distillation of only *Spirit* of Nitre, from its weight of crude Antimony separate, in a short time, a yellow and very inflamable *Sulphur*, which, for ought I know, deserves as much the name of an Element, as any thing that Chymists are wont to separate from any Mineral by the Fire. I could perhaps tell you of other Operations upon Antimony, whereby That may be extracted from it, which cannot be forc'd out of it by the Fire; but I shall reserve them for a fitter Opportunity, and only annex at present this slight, but not impertinent Experiment. That whereas I lately observed to you, that the Urinous and common *Salts* whereof *Sal Armoniack* consists, remain'd unsever'd by the Fire in many successive *Sublimations*, they may be easily separated, and partly without any Fire at all, by pouring upon the Concrete finely powder'd, a *Solution* of *Salt* of Tartar, or of the *Salt* of Wood-Ashes; for upon your diligently mixing

of

of these you will finde your Nose invaded with a very strong smell of Urine, and perhaps too your Eyes forc'd to water, by the same subtle & piercing Body that produces the stink; both these effects proceding from hence, that by the Alcalizate *Salt*, the *Sea Salt* that enter'd the composition of the *Sal Armoniack* is mortify'd and made more fixt, and thereby a divorce is made between it and the volatile Urinous *Salt*, which being at once set at liberty, and put into motion, begins presently to fly away, and to offend the Nostrils and Eyes it meets with by the way. And if the operation of these *Salts* be in convenient Glasses promoted by warmth, though but by that of a Bath, the ascending *Steames* may easily be caught and reduc'd into a penetrant *Spirit*, abounding with a *Salt*, which I have sometimes found to be separable in a Chrystalline Form. I might add to these Instances, that whereas *Sublimate*, consisting, as you know, of *Salts* & Quicksilver combin'd and carried up together by Heat, may be *Sublim'd*, I know not how often, by a like degree of Fire, without sufferingany divorce of the component Bodies, the Mercury may be ea-

ſily ſever'd from the adhering *Salts*, if the *Sublimate* be diſtill'd from *Salt* of Tartar, Quick Lime, or ſuch Alcalizate Bodies. But I will rather obſerve to you, *Eleutherius*, what divers ingenious men have thought ſomewhat ſtrange; that by ſuch an Additament that ſeems but only to promote the *Separation*, there may be eaſily obtain'd from a Concrete, that by the Fire alone is eaſily diviſible into all the Elements that Vegetables are ſuppos'd to conſiſt of, ſuch a ſimilar *Subſtance* as differs in many reſpects from them all, and conſequently has by many of the moſt Intelligent Chymiſts been denied to be contain'd in the mixt Body. For I know a way, and have practis'd it, whereby common Tartar, without the addition of any thing that is not perfectly a Mineral, except *Salt-petre*, may by one Diſtillation in an Earthen Retort be made to afford good ſtore of real *Salt*, readily diſſoluble in water, which I found to be neither acid, nor of the ſmell of Tartar, and to be almoſt as volatile as *Spirit* of Wine it ſelf, and to be indeed of ſo differing a Nature from all that is wont to be ſepa-rated by Fire from Tartar, and divers

Learned

earned Men, with whom I discours'd it, could hardly be brought to believe, that so fugitive a *Salt* could be forded by Tartar, till I assur'd it them on my own Knowledge. And if I did ot think you apt to suspect me to be ther too backward than too forward credit or affirm unlikely things, I uld convince you by what I have yet ing by me of that anomalous *Salt*.

The Fourth thing that I shall alledge countenance my first Consideration, That the Fire even when it divides a ody into *Subs*tances of divers Consiences, does not most commonly anaze it into Hypostatical Principles, but nly disposes its parts into new Texures, & thereby produces Concretes of new indeed, but yet of a compound Naure. This Argument it will be requisite or me to prosecute so fully hereafter, nat I hope you will then confess that 'tis ot for want of good Proofs that I desire eave to suspend my Proofs till the *Seies* of my Discourse shall make it more roper and seasonable to propose them.

It may be further alledg'd on the behalf of my First Consideration, That ome such distinct Subs*tances* may be obtain'd

tain'd from some Concretes without Fire, as deserve no less the name of Elementary, than many that Chymists extort by the Violence of the Fire.

We see that the Inflamable Spirit or as the Chymists esteem it, the Sulphur of Wine, may not only be separated from it by the gentle heat of a Bath but may be distill'd either by the help of the Sun-Beams, or even of a Dunghill being indeed of so Fugitive a Nature that it is not easy to keep it from flying away, even without the Application of external heat. I have likewise observ'd that a Vessel full of Urine being plac'd in a Dunghill, the Putrefaction is won after some weeks so to open the Body that the parts disbanding the Saline *Spirit*, will within no very long time, if the Vessel be not stopt, fly away of it self. Insomuch that from such Urine I have been able to distill little or nothing else than a nauseous Phlegme, instead of the active and piercing *Salt* and *Spirit* that it would have afforded, when first expos'd to the Fire, if the Vessel had been carefully stopt.

And this leads me to consider in the Fifth place, That it will be very hard to prove,

ove, that there can no other Body or
y be given which will as well as the
re divide Concretes into several ho-
ogeneous Substances, which may con-
quently be call'd their Elements or
inciples, as well as those separated or
oduc'd by the Fire. For since we have
tely seen, that Nature can successfully
ploy other Instruments than the Fire
separate distinct Substances from mixt
odies, how know we, but that Nature
is made, or Art may make, some such
ubstance as may be a fit Instrument to
nalyze mixt Bodies, or that some
ich Method may be found by Humane
ndustry or Luck, by whose means com-
ound Bodies may be resolv'd into other
ubstances, than such as they are wont to
e divided into by the Fire. And why
he Products of such an *Analysis* may not
s justly be call'd the component Prin-
iples of the Bodies that afford them,
t will not be easy to shew, especially
ince I shall hereafter make it evident,
hat the Substances which Chymists are
wont to call the Salts, and Sulphurs, and
Mercuries of Bodies, are not so pure and
Elementary as they presume, and as
their *Hypothesis* requires. And this may
there

therefore be the more freely preſs'd up
on the Chymiſts, becauſe neither th
Paracelſians, nor the *Helmontians* can re
ject it without apparent Injury to thei
reſpective Maſters. For *Helmont* do's mor
than once Inform his Readers, that bot
Paracelſus and Himſelf were Poſſeſſor
of the famous Liquor, *Alkaheſt*, whic
for its great power in reſolving Bodie
irreſoluble by Vulgar Fires, he ſome
where ſeems to call *Ignis Gehennæ*. T
this Liquor he aſcribes, (and that i
great part upon his own Experience
ſuch wonders, that if we ſuppoſe then
all true, I am ſo much the more a Frien
to Knowledge than to Wealth, that
ſhould think the *Alkaheſt* a nobler an
more deſireable Secret than the Philo
ſophers Stone it ſelf. Of this Univerſa
Diſſolvent he relates, That having di-
geſted with it for a competent time a
piece of Oaken Charcoal, it was there-
by reduc'd into a couple of new and di-
ſtinct Liquors, diſcriminated from each
other by their Colour and Situation, and
that the whole body of the Coal was
reduc'd into thoſe Liquors, both of them
ſeparable from his Immortal *Menſtruum*,
which remain'd as fit for ſuch Operati-
ons

s as before. And he moreover tells us divers places of his Writings, that his powerful, and unwearied Agent, could dissolve Metals, Marchasites, ones, Vegetable and Animal Bodies what kinde soever, and even Glass it f (first reduc'd to powder,) and in a ord, all kind of mixt Bodies in the 'orld into their several similar Subnces, without any Residence or *Caput rtuum*. And lastly, we may gather this rther from his Informations, That the omogeneous Substances obtainable om compound Bodies by his piercing liquor, were oftentimes different enough oth as to Number and as to Nature, om those into which the same Bodies e wont to be divided by common Fire. f which I shall need in this place to ention no other proof, than that where- we know that in our common *Analysis* f a mixt Body, there remains a terrestri- l and very fixt Substance, oftentimes asociated with a Salt as fixt; Our Author ells us, that by his way he could Distill ver all Concretes without any *Caput ortuum*, and consequently could make hose parts of the Concrete volatile, hich in the Vulgar *Analysis* would have been

been fixt. So that if our Chymists wi
not reject the solemn and repeated Te
stimony of a Person, who cannot but b
acknowledg'd for one of the greate
Spagyrists that they can boast of, the
must not deny that there is to be foun
in Nature another Agent able to Analyz
compound Bodies less violently, an
both more genuinely and more unive
sally than the Fire. And for my ow
part, though I cannot but say on this Oc
casion what (you know) our Frien
Mr. *Boyle* is wont to say, when he is ask
his Opinion of any strange Experimen
That He that hath seen it hath more Rea
son to beleeve it, than He that hath not, ye
I have found *Helmont* so faithful a Write
even in divers of his improbable Experi
ments (I always except that Extravagan
Treatise *De Magnetica Vulnerũ Curation*
which some of his Friends affirm to hav
been first publish'd by his Enemies
that I think it somewhat harsh to giv
him the Lye, especially to what he de
livers upon his own proper Tryal. An
I have heard from very credible Eye
witnesses some things, and seen some
others my self, which argue so strongly
that a circulated Salt, or a *Menstruum*
(such

(such as it may be) may by being abstracted from compound Bodies, whether Mineral, Animal, or Vegetable, have them more unlockt than a wary Naturalist would easily beleeve, that I are not confidently measure the Power of Nature and Art by that of the *Menstruums*, and other Instruments that eminent Chymists themselves are as yet wont to employ about the Analyzing of Bodies; nor Deny that a *Menstruum* may at least from this or that particular Concrete obtain some apparently similar Substance, differing from any obtainable from the same Body by any degree or manner of Application of the Fire. And I am the more backward to deny peremptorily, that there may be such Openers of compound Bodies, because among the Experiments that make me speak thus warily, there want-ed not some in which it appear'd not, that one of the Substances, not separable by common Fires and *Menstruums*, could retain any thing of the Salt by which the separation was made.

And here, *Eleutherius*, (saies *Carneades*) I should conclude as much of my Discourse as belongs to the first Consideration

ſideration I propos'd, but that I foreſee that what I have delivered will appear liable to two ſuch ſpecious Objections, that I cannot ſafely proceed any further till I have examin'd them.

And firſt, one ſort of Oppoſers will be forward to tell me, That they do not pretend by Fire alone to ſeparate out of all compound Bodies their *Hypoſtatical* Principles; it being ſufficient that the Fire divides them into ſuch, though afterwards they employ other Bodies to collect the ſimilar parts of the Compound; as 'tis known, that though they make uſe of water to collect the Saline parts of Aſhes from the Terreſtrial wherewith they are blended, yet it is the Fire only that Incinerates Bodies, and reduces the fix'd part of them into the Salt and Earth, whereof Aſhes are made up. This Objection is not, I confeſs, inconſiderable, and I might in great part allow of it, without granting it to make againſt me, if I would content my ſelf to anſwer, that it is not againſt thoſe that make it that I have been diſputing, but againſt thoſe Vulgar Chymiſts, who themſelves believe, and would fain make others do ſo, That the Fire is not only an

n universal, but an adequate and suffi-
ient Instrument to analyze mixt Bodies
ith. For as to their Practice of Extra-
ing the fix'd Salt out of Ashes by the
ffusion of Water, 'tis obvious to al-
dge, that the Water does only as-
mble together the Salt, the Fire had
efore divided from the Earth: as a
eve does not further break the Corn,
it only bring together into two distinct
aps the Flower and the Bran, whose
orpuscles before lay promiscuously
ended together in the Meal. This I say
might alledge, and thereby exempt
y self from the need of taking any
rther notice of the propos'd Objecti-
n. But not to lose the Rise it may af-
rd me of Illustrating the matter under
onsideration, I am content briefly to
onsider it, as far forth as my present
isquisition may be concern'd in it.

Not to repeat then what has been al-
eady answer'd, I say further, that though
am so civil an Adversary, that I will
llow the Chymists, after the Fire has
one all its work, the use of fair Water
o make their Extractions with, in such
ases wherein the Water does not co-
perate with the Fire to make the *Ana-*

lysis; yet since I Grant this but upon Su
position that the Water does only wa
off the Saline Particles, which the Fi
alone has before Extricated in-tl
Analyz'd Body, it will not be Reaso
able, that this Concession should Exte
to other Liquors that may Add to wh
they Dissolve, nor so much as to oth
Cases than those Newly Mentioned
Which Limitation I Desire You wou
be Pleas'd to Bear in Mind till I sha
Anon have Occasion to make Use of
And This being thus Premis'd, I sha
Proceed to Observe,

First, That Many of the Instances
Propos'd in the Preceding Discourse a
Such, that the Objection we are Co
sidering will not at all Reach Them. Fo
Fire can no more with the Assistan
of Water, than without it, Separate an
of the Three Principles, either fro
Gold, Silver, Mercury, or some Othe
of the Concretes named Above:

Hence We may Inferre, That Fir
is not an Universal Analyzer of all Mix
Bodies, since of Metals and Mineral
wherein Chymists have most Exercis
Themselves, there Appear scarce An
which they are able to Analyze by Fire

Nay

Nay, from which they can Unqueſtionably Separate ſo much as any One of their Hypoſtatical Principles; Which may well Appear no ſmall Diſparagement, as well to their *Hypotheſis*, as to their Pretenſions.

It will alſo remain True, notwithſtanding the Objection, That there may be Other Wayes, than the wonted *Analyſis* by Fire, to Separate from a Compound Body Subſtances as Homogeneous as thoſe that Chymiſts Scruple not to Reckon among their *Tria Prima* (as ſome of them, for Brevity Sake, all their Three Principles.)

And it Appears, That by Convenient Additaments ſuch Subſtances may be Separated by the Help of the Fire, as could not be ſo by the Fire alone: Witneſs the Sulphur of Antimony.

And Laſtly, I muſt Repreſent, That ſince it appears too that the Fire is but One of the Inſtruments that muſt be Imploy'd in the Reſolution of Bodies, We may Reaſonably Challenge the Liberty of doing Two Things. For when ever any *Menſtruum* or other Additament is Employ'd, together with the Fire to Obtain a Sulphur or a Salt from

a Body, We may well take the Free dom to Examine, whether or no Tha *Menſtruum* do barely Help to Separat the Principle Obtain'd by It, or whethe there Intervene not a Coalition of th Parts of the Body Wrought upon witl Thoſe of the *Menſtruum*, whereby th Produc'd Concrete may be Judg'd t Reſult from the Union of Both. And i will be farther Allowable for Us t Conſider, how far any Subſtance, Sepa rated by the Help of ſuch Additament Ought to paſs for one of the *Tria Prima* ſince by One Way of Handling the ſam Mixt Body, it may, according to the Na ture of the Additaments, and the Metho of Working upon it, be made to Affor differing Subſtances from thoſe Obtain able from it by other Additaments, an another Method, nay and (as may ap pear by what I Formerly told You abou Tartar) Differing from any of the Sub ſtances into which a Concrete is Diviſi ble by the Fire without Additaments though perhaps thoſe Additaments d not, as Ingredients, enter the Compoſi tion of the Obtained Body, but only Diverſify the Operation of the Fir upon the Concrete; and though tha

Con-

Concrete by the Fire alone may be Di-
ided into a Number of Differing Sub-
tances, as Great as any of the Chymists;
hat I have met with, teach us that of
he Elements to be. And having said
nus much (saies *Carneades*) to the Ob-
ection likely to be Propos'd by some
Chymists, I am now to Examine that
which I Foresee will be Confidently
ress'd by Divers Peripateticks, who,
o Prove Fire to be the true Analyzer of
Bodies, will Plead, That it is the very
Definition of Heat given by *Aristotle*,
nd Generally Received, *Congregare Ho-
nogenea, & Heterogenea Segregare*, to
Assemble Things of a Resembling, and
Disjoyn those of a Differing Nature.
To this I answer, That this Effect is far
rom being so Essential to Heat, as 'tis
Generally Imagin'd; for it rather Seems,
hat the True and Genuine Property of
Heat is, to set a Moving, and thereby to
Dissociate the parts of Bodies, and Sub-
livide them into Minute Particles, with-
out regard to their being Homogeneous
or Heterogeneous, as is apparent in the
Boyling of Water, the Distillation of
Quicksilver, or the Exposing of Bodies
o the action of the Fire, whose Parts

either Are not (at leaſt in that Degree of Heat Appear not) Diſſimilar, where all that the Fire can do, is to Divide the Body into very Minute Parts which are of the ſame Nature with one another, and with their *Totum*, as their Reduction by Condenſation Evinces. And even when the Fire ſeems moſt ſo *Congregare Homogenea, & Segregare Heterogenea*, it Produces that Effect but by Accident; For the Fire does but Diſſolve the Cement, or rather Shatter the Frame, or ſtructure that kept the Heterogeneous Parts of Bodies together, under one Common Form; upon which Diſſolution the Component Particles of the Mixt, being Freed and ſet at Liberty, do Naturally, and oftentimes without any Operation of the Fire, Aſſociate themſelves each with its Like, or rather do take thoſe places which their Several Degrees of Gravity and Levity, Fixedneſs or Volatility (either Natural, or Adventitious from the Impreſſion of the Fire) Aſſigne them. Thus in the Diſtillation (for Inſtance) of Man's Blood, the Fire do's Firſt begin to Diſſolve the *Nexus* or Cement of the Body; and then the Water, being the moſt Vo-

Volatile, and Easy to be Extracted, is ither by the Igneous Atomes, or the gitation they are put into by the Fire, rst carried up, till Forsaken by what arried it up, its Weight sinks it down, nto the Receiver: but all this while the ther Principles of the Concrete Remain nsever'd, and Require a stronger Deree of Heat to make a Separation of its ore Fixt Elements; and therefore the ire must be Increas'd which Carries ver the Volatile Salt and the Spirit, hey being, though Beleev'd to be Difering Principles, and though Really of Different Consistency, yet of an almost Equal Volatility. After them, as less ugitive, comes over the Oyl, and leaves ehinde the Earth and the *Alcali*, which eing of an Equal Fixedness, the Fire evers them not, for all the Definition f the Schools. And if into a Red-hot Earthen or Iron Retort you cast the Matter to be Distill'd, You may Oberve, as I have often done, that the Predominant Fire will Carry up all the Volatile Elements Confusedly in one fume, which will afterwards take their Places in the Receiver, either according o the Degree of their Gravity, or ac-

cording to the Exigency of their respective Textures; the Salt Adhering for the most part, to the Sides and Top and the Phlegme Fastening it self there too in great Drops, the Oyle and Spirit placing themselves Under, or Above one another, according as their Ponderousness makes them Swim or Sink. For 'tis Observable, that though Oyl or Liquid Sulphur be one of the Elements Separated by this Fiery *Analysis*, yet the Heat which Accidentally Unites the Particles of the other Volatile Principles, has not alwayes the same Operation on this, there being divers Bodies which Yield Two Oyls, whereof the One sinks to the Bottom of that Spirit on which the other Swims; as I can shew You in some Oyls of the same Deers Blood, which are yet by Me: Nay I can shew you Two Oyls carefully made of the same Parcel of Humane Blood, which not only Differ extreamly in Colour, but Swim upon one another without Mixture, and if by Agitation Confounded will of themselves Divorce again.

And that the Fire doth oftentimes divide Bodies, upon the account that some

of

their Parts are more Fixt, and some ore Volatile, how far soever either of ese Two may be from a pure Elemenry Nature is Obvious enough, if Men ould but heed it in the Burning of ood, which the Fire Dissipates into noake and Ashes: For not only the tter of these is Confessedly made up two such Differing Bodies as Earth id Salt; but the Former being conens'd into that Soot which adheres to ur Chimneys, Discovers it self to Conin both Salt and Oyl, and Spirit and arth, (and some Portion of Phlegme oo) which being, all almost, Equally olatile to that Degree of Fire which orces them up, (the more Volatile arts Helping perhaps, as well as the rgency of the Fire, to carry up the ore Fixt ones, as I have often Try'd Dulcify'd *Colcothar*, Sublim'd by *Sal rmoniack* Blended with it) are carid Up together, but may afterwards e Separated by other Degrees of Fire, hose orderly Gradation allowes the isparity of their Volatileness to Discover it self. Besides, if Differing Bodies nited into one Mass be both sufficienty Fixt, the Fire finding no Parts Volatile enough

enough to be Expell'd or carried up makes no Separation at all; as may appear by a Mixture of Colliquated Silver and Gold, whose Component Metal may be easily Sever'd by *Aqua fortis*, or *Aqua Regis* (according to the Predominancy of the Silver or the Gold) but in the Fire alone, though vehement the Metals remain unsever'd, the Fire only dividing the Body into smaller Particles (whose Littleness may be argued from their Fluidity) in which either the little nimble Atoms of Fire, or its brisk and numberless strokes upon the Vessels, hinder Rest and Continuity without any Sequestration of Elementary Principles. Moreover, the Fire sometimes does not Separate, so much as Unite, Bodies of a differing Nature; provided they be of an almost resembling Fixedness, and have in the Figure of their Parts an Aptness to Coalition, as we see in the making of many Plaisters, Oyntments, &c. And in such Metalline Mixtures as that made by Melting together two parts of clean Brass with one of pure Copper, of which some Ingenious Trades-men cast such curious Patterns (for Gold and Silver Works)

as

I have ſometimes taken great Plea-
re to Look upon. Sometimes the Bo-
s mingled by the Fire are Differing
ough as to Fixidity and Volatility,
d yet are ſo combin'd by the firſt Ope-
ion of the Fire, that it ſelf does ſcarce
erwards Separate them, but only
lverize them; whereof an Inſtance is
orded us by the Common Preparati-
of *Mercurius Dulcis*, where the Sa-
e Particles of the Vitriol, Sea Salt,
d ſometimes Nitre, Employ'd to
ake the Sublimate, do ſo unite them-
lves with the Mercurial Particles made
e of, firſt to Make Sublimate, and
en to Dulcifie it, that the Saline and
etalline Parts ariſe together in many
cceſſive Sublimations, as if they all
ade but one Body. And ſometimes
o the Fire does not only not Sever the
ffering Elements of a Body, but Com-
ne them ſo firmly, that Nature her-
lf does very ſeldom, if ever, make
nions leſs Diſſoluble. For the Fire
eeting with ſome Bodies exceedingly
d almoſt equally Fixt, inſtead of
aking a Separation, makes an Union
ſtrict, that it ſelf, alone, is unable to
iſſolve it; As we ſee, when an Alca-
lizate

lizate Salt and the Terreſtrial Reſidu
of the Aſhes are Incorporated with pur
Sand, and by Vitrification made on
permanent Body, (I mean the courſ
or greeniſh ſort of Glaſs) that mock
the greateſt Violence of the Fire, whic
though able to Marry the Ingredients c
it, yet is not able to Divorce them. I ca
ſhew you ſome pieces of Glaſs whic
I ſaw flow down from an Earthen Cru
cible purpoſely Expos'd for a goo
while, with Silver in it, to a very vehe
ment Fire. And ſome that deal muc
in the Fuſion of Metals Informe me
that the melting of a great part of
Crucible into Glaſs is no great Wonde
in their Furnaces. I remember, I hav
Obſerv'd too in the Melting of grea
Quantities of Iron out of the Oar, by
the Help of ſtore of Charcoal (for they
Affirm that Sea-Coal will not yield
Flame ſtrong enough) that by the pro
digious Vehemence of the Fire, Excite
by vaſt Bellows (made to play by grea
Wheels turn'd about by Water) part
of the Materials Expos'd to it was, in-
ſtead of being Analyz'd, Colliquated,
and turn'd into a Dark, Solid and very
Ponderous Glaſs, and that in ſuch Quan-
tity,

ty; that in some places I have seen the ry High-wayes, neer such Iron-works, ended with Heaps of such Lumps of lasse, instead of *S*tones and Gravel. nd I have also Observ'd, that some nd of Fire-stone it *S*elf, having been nploy'd in Furnaces wherein it was ex- os'd to very strong and lasting Fires, is had all its Fixt Parts so Wrought on the Fire, as to be Perfectly Vitrifi'd, hich I have try'd by Forcing from it retty large Pieces of Perfect and Transarent Glass. And lest You might ink, *Eleutherius*, that the Question'd efinition of Heat may be Demonstraed, by the Definition which is wont be given and Acquiesc'd in, of its ontrary Quality, Cold, whose properis taught to be *tam Homogenea, quam leterogenea congregare*, Give me leave o represent to You, that neither is this efinition unquestionable; for not to lention the Exceptions, which a *Logian*, as such, may Take at it, I Conider that the Union of Heterogeneous Bodies which is *S*uppos'd to be the Genuine Production of Cold, is not Perorm'd by every Degree of Cold. For ve see for Instance that in the Urine of Healthy

Healthy Men, when the Liquor h
been Suffer'd a while to ſtand, t
Cold makes a Separation of the Th
ner Part from the Groſſer, which Si
ſides to the Bottom, and Growes
pacous there; whereas if the Urin
be Warme, theſe Parts readily Min
again, and the whole Liquor becon
Tranſparent as before. And when,
Glaciation, Wood, Straw, Duſt, W
ter, &c. are Suppos'd to be United in
one Lump of Ice, the Cold does n
Cauſe any Real Union or Adunatio
(if I may ſo Speak) of theſe Bodie
but only Hardening the Aqueous Pa
of the Liquor into Ice, the other B
dies being Accidentally Preſent in th
Liquor are frozen up in it, but n
Really United. And accordingly if w
Expoſe a Heap of Mony Conſiſting
Gold, Silver and Copper Coynes,
any other Bodies of Differing Natures
which are Deſtitute of Aqueous Mo
ſture, Capable of Congelation, t
never ſo intenſe a Cold, we find nc
that theſe Differing Bodies are at a
thereby ſo much as Compacted, muc
leſs United together; and even in Li
quors Themſelves we find *Phænomen*
whic

hich Induce us to Queſtion the Defi-
tion which we are examining. If
aracelſus his Authority were to be
ok't upon as a *Sufficient* Proof in mat-
rs of this Nature, I might here inſiſt
1 that Proceſs of his, whereby he
eaches that the Eſſence of Wine may
: Sever'd from the Phlegme and Ig-
ble Part by the Aſſiſtance of Con-
lation: and becauſe much Weight
s been laid upon this Proceſs, not on-
by *Paracelſians*, but other Writers,
me of whom ſeem not to have per-
'd it themſelves, I ſhall give You the
ıtire Paſſage in the Authors own
'ords, as I lately found them in the
xth Book of his *Archidoxis*, an Extract
hereof I have yet about me; and it
unds thus. *De Vino ſciendum eſt, fæ-
m phlegmaque ejus eſſe Mineram, & Vi-
ſubſtantiam eſſe corpus in quo conſer-
atur Eſſentia, prout auri in auro latet
ſſentia. Juxta quod Practicam nobis ad
lemoriam ponimus, ut non obliviſcamur,
d hunc modum: Recipe Vinum ve-
ſtiſſimum & optimum quod habere po-
ris, calore ſaporeque ad placitum, hoc in
as vitreum infundas ut tertiam ejus par-
em impleat, & ſigillo Hermetis occluſum*

in

in equino ventre menſibus quatuor, & i
continuato calore teneatur qui non defici
Quo peracto, Hyeme cum frigus & ge
maxime ſæviunt, his per menſem expon
tur ut congeletur. Ad hunc modum fr
gus vini ſpiritum una cum ejus ſubſtant
protrudit in vini centrum, ac ſeparat
phlegmate: Congelatum abjice, quod ve
congelatum non eſt, id Spiritum cum ſu
ſtantia eſſe judicato. Hunc in Pelicanu
poſitum in arenâ digeſtione non adeo cal
da per aliquod tempus manere ſinito; Poſ
modum eximito vini Magiſterium, de qu
locuti ſumus.

But I dare not *Eleu.* lay much Weigh
upon this Proceſs, becauſe I have foun
that if it were True, it would be but ſel
dom Practicable in this Countrey upo
the beſt Wine: for Though this pre
ſent Winter hath been Extraordinar
Cold, yet in very Keen Froſts accom
panied with laſting Snowes, I have no
been able in any Meaſure to Freez a thi
Vial full of Sack; and even with Snow
and Salt I could Freeze little more ther
the Surface of it; and I ſuppoſe *Eleu.*
that tis not every Degree of Cold that
is Capable of Congealing Liquors
which is able to make ſuch an *Analyſi.*

i

(f I may ſo call it) of them by Separa-
ig their Aqueous and Spirituous Parts;
r I have ſometimes, though not often,
zen ſeverally, Red-Wine, Urine and
lk; but could not Obſerve the expe-
d Separation. And the Dutch-Men
tt were forc'd to Winter in that Icie
gion neer the Artick Circle, call'd
va Zembla, although they relate, as
ſhall ſee below, that there was a
paration of Parts made in their fro-
n Beer about the middle of *November*
t of the freezing of their Sack in *De-*
nber following they give but this Ac-
unt: *Tea and our Sack, which is ſo hot,*
is Frozen very hard, ſo that when we
re every Man to have his part, we were
c'd to melt it in the Fire; which we
ar'd every ſecond Day, about half a Pinte
r a Man, wherewith we were forc'd to
ſtain our ſelves. In which words they
ply not, that their Sack was divided
the Froſt into differing Subſtances;
ter ſuch manner as their Beer had
en. All which notwithſtanding, *Eleu.*
ppoſe that it may be made to appear,
at even Cold ſometimes may *Congre-*
re Homogenea, & Heterogenea Segrega-
: and to Manifeſt this I may tell you,

that I did once, purposely, cause to b
Decocted in fair Water a Plant aboun
ing with Sulphureous and Spirituo
Parts, and having expos'd the Decocti
to a keen North-Wind in a very Frol
Night, I observ'd, that the more Aqueo
Parts of it were turn'd by the next Mo
ning into Ice, towards the innermo
part of which, the more Agile and Spi
tuous parts, as I then conjectur'd, h
ving Retreated, to shun as much as mig
be their Environing Enemy, they h
there preserv'd themselves unfrozen
the Form of a high colour'd Liquor; t
Aqueous and Spirituous parts havi
been so slightly (Blended rather tha
United in the Decoction, that they we
easily Separable by such a Degree
Cold, as would not have been able
have Divorc'd the Parts of Urine
Wine, which by Fermentation or Dig
stion are wont, as Tryal has inform
me, to be more intimately associate
each with other. But I have already int
mated, *Eleutherius*, that I shall not Insi
on this Experiment, not only becaus
having made it but once I may possibl
have been mistaken in it; but also (an
that principally) because of that muc
mor

more full and eminent Experiment of the Separative Vertue of extream Cold, that was made, against their Wills, by the forementiond Dutch men that Winter'd in *Nova Zembla*; the Relation of whose Voyage being a very scarce Book, it will not be amiss to give you that Memorable part of it which concerns our present Theme, as I caus'd the Passage to be extracted out of the Englished Voyage it self.

"*Gerard de Veer*, *John Cornelyson* and "Others, sent out of *Amsterdam*, *Anno* "*Dom.* 1596. being forc'd by unseasonable Weather to Winter in *Nova Zembla*, near Ice-Haven; on the thirteenth "of *October*, Three of us (saies the Relation) went aboard the Ship, and laded a Sled with Beer; but when we had "laden it, thinking to go to our House "with it, suddenly there arose such a "Winde, and so great a Storm and Cold, "that we were forc'd to go into the Ship "again, because we were not able to "stay without; and we could not get the "Beer into the Ship again, but were "forc'd to let it stand without upon the "Sled: the Fourteenth, as we came out "of the Ship, we found the Barrel of

"Beer ſtanding upon the Sled, but it was "faſt frozen at the Heads; yet by rea- "ſon of the great Cold, the Beer that "purg'd out froze as hard upon the Side "of the Barrel, as if it had been glu'd "thereon: and In that ſort we drew "it to our Houſe, and ſet the Barrel an "end, and drank it up; but firſt we were "forc'd to melt the Beer, for there was "ſcarce any unfrozen Beer in the bar- "rel; but in that thick Yeaſt that was "unfrozen, lay the Strength of the Beer, "ſo that it was too ſtrong to drink a- "lone, and that which was frozen "taſted like Water; and being melted "we Mix'd one with the other, and ſo "drank it; but it had neither Strength "nor Taſt.

And on this Occaſion I remember, that having the laſt very Sharp Winter purpoſely try'd to Freeze, among other Liquors, ſome Beer moderately ſtrong, in Glaſs Veſſels, with Snow and Salt, I obſerv'd, that there came out of the Neck a certain thick Subſtance, which, it ſeems, was much better able than the reſt of the Liquor (that I found turn'd into Ice) to reſiſt a Froſt; and which, by its Colour and conſiſtence ſeem'd ma-

nifeſtly

ifeſtly enough to be Yeaſt, whereat, I onfeſs, I ſomewhat marvail'd, beauſe I did not either diſcerne by the aſte, or find by Enquiry, that the Beer as at all too New to be very fit to be rank. I might confirm the Dutchmens elation, by what happen'd a while ſince a neere Friend of mine, who complained to me, that having Brew'd me Beer or Ale for his own drinking *Holland* (where he then dwelt) e Keenneſs of the late bitter Winter oze the drink ſo as to reduce it into e, and a ſmall Proportion of a very rong and Spirituous Liquor. But I uſt not entertaine you any longer conerning Cold, not onely becauſe you ay think I have but loſt my way to a Theme which does not direct- belong to my preſent Undertaking; ut becauſe I have already enlarg'd my lf too much upon the firſt Conſideion I propos'd, though it appears much a Paradox, that it ſeem'd to equire that I ſhould ſay much to eep it from being thought a meer xtravagance; yet ſince I Undertook ut to make the common Aſſumption

of our Chymists and *Aristotelians* ap
pear Questionable, I hope I have
Perform'd that Task, that I may no
Proceed to my Following Considerat
ons, and Insist less on them than I hav
done on the First.

Th

THE SCEPTICAL CHYMIST

The Second Part.

THE Second Conſideration I Deſire to have Notice Taken of, is This; That it is not ſo Sure, as Both Chymiſts and *Ariſtotelians* are wont to Think it, that every Seemingly Similar or Diſtinct Subſtance that is Separated from a Body by the Help of the Fire, was Pre-exiſtent in it as a Principle or Element of it.

That I may not make this Paradox a Greater than I needs muſt, I will Firſt Briefly Explain what the Propoſition means, before I proceed to Argue for it.

And I ſuppoſe You will eaſily Believe

That I do not mean that any thing
ſeparable from a body by Fire, th
was not Materially pre-exiſtent in i
for it Far Exceeds the power of Mee
ly Naturall Agents, and Conſequent
of the Fire, to produce anew,
Much as one Atome of Matter, whic
they can but Modifie and Alter, n
Create; which is ſo Obvious a Truth
that almoſt all Sects of Philoſophe
have Deny'd the Power of producin
Matter to Second Cauſes; and the *E*
picureans and ſome Others have Don
the Like, in Reference to their Goc
themſelves.

Nor does the Propoſition perempto
rily Deny, but that ſome Things Ob
tain'd by the Fire from a Mixt Body
may have been more than barely Mate
rially pre-exiſtent in it, ſince there ar
Concretes, which before they be Ex
pos'd to the Fire afford us ſeveral Do
cuments of their abounding, ſome with
Salt, and Others with Sulphur. For
it will ſerve the preſent Turn, if it ap
pear that diverſe things Obtain'd from
a Mixt Body expos'd to the Fire, were
not its Ingredients Before: for if this be
made to appear, it will be Rationall e-
nough

ough to ſuſpect that Chymiſts may De-
ive themſelves, and Others, in con-
uding Reſolutely and Univerſally,
oſe Subſtances to be the Elementary
gredients of Bodies barely ſeparated
y the Fire, of which it yet may be
oubted, Whether there be ſuch or No;
leaſt till ſome other Argument, than
at drawn from the *Analyſis*, be Brought
reſolve the Doubt.

That then which I Mean by the Pro-
oſition I am Explaining, is, That it
ay without Abſurdity be Doubted
hether or no the Differing Subſtances
btainable from a Concrete Diſſipated
y the Fire were ſo Exiſtent in it in
hat Forme (at leaſt as to their minute
arts) wherein we find them when
he *Analyſis* is over, that the Fire did
nly Dis-joyne and Extricate the Cor-
uſcles of one Principle from thoſe of
he other wherewith before they were
Blended.

Having thus Explain'd my Propoſiti-
n, I ſhall endeavour to do two things,
o prove it; The firſt of which is to ſhew
hat ſuch Subſtances as Chymiſts call
Principles may be produc'd *De novo*.
as they ſpeak) And the other is to
make

make it probable, that by the Fire w
may Actually obtain from some Mix
Bodies such Substances, as were not i
the Newly Expounded sence, pre-ex
stent in them.

To begin then with the First of thes
I Consider that if it be as true, as 't
probable, that Compounded Bodie
Differ from One Another but in th
Various Textures Resulting from th
Bignefs, Shape, Motion, and contri
vance of their small parts, It will not b
Irrational to conceive that one and th
same parcel of the Universall Matte
may by Various Alterations and Con
textures be brought to Deserve th
Name, sometimes of a Sulphureous, an
sometimes of a Terrene, or Aqueous Bo
dy. And this I could more largely Ex
plicate, but that our Friend Mr. Boyl
has promis'd us something about Qua
lities, wherein the Theme I now willing
ly Resign him, Will I Question no
be Studiously Enquired into. Where
fore what I shall now advance in fa
vour of what I have lately Deliver'd
shall be Deduc'd from Experiments
made Divers Years since. The first
of which would have been much more
con-

nſiderable, but that by ſome interve-
ng Accidents I was Neceſſitated to
ſe the beſt time of the year, for a trial
the Nature of that I deſign'd; it being
out the middle of *May* before I was
le to begin an Experiment which
ould have then been two moneths
d; but ſuch as it was, it will not per-
aps be impertinent to Give You this
arrative of it. At the time newly
lention'd, I caus'd My Gardiner (be-
ng by Urgent Occaſions Hinder'd from
eing preſent my ſelf) to dig out a con-
enient quantity of good Earth, and
ry it well in an Oven, to weigh it,
o put it in an Earthen pot almoſt level
ith the Surface of the ground, and to
et in it a ſelected ſeed he had before re-
eived from me, for that purpoſe, of
quaſh, which is an Indian kind of Pom-
ion, that Growes a pace; this ſeed
Ordered Him to Water only with
Rain or Spring Water. I did not
when my Occaſions permitted me to
iſit it) without delight behold how
faſt it Grew, though unſeaſonably ſown;
but the Haſtning Winter Hinder'd it
from attaining any thing neer its due
and Wonted magnitude; (for I found
the

the ſame Autumn, in my Garden ſome of thoſe plants, by Meaſure, big about as my Middle) and made n order the having it taken Up; whic about the Middle of *October* was car fully Done by the ſame Gardiner, wh a while after ſent me this account of i *I have Weighed the Pompion with th Stalk and Leaves, all which Weighed thr pound wanting a quarter; Then I took th Earth, baked it as formerly, and found i juſt as much as I did at Firſt, which mad me think I had not dry'd it Sufficiently then I put it into the Oven twice More, af ter the Bread was Drawn, and Weighed i the Second time, but found it Shrink litt or nothing.*

But to deal Candidly with You, *Eleutherius*, I muſt not conceal from You the Event of another Experiment of this Kind made this preſent Summer, wherein the Earth ſeems to have been much more Waſted; as may appear by the following account, Lately ſent me by the ſame Gardiner, in theſe Words. *To give You an Account of your Cucumbers, I have Gain'd two Indifferent Fair Ones, the Weight of them is ten Pound and a Halfe, the Branches with the Roots*

ots *Weighed four Pounds wanting two* nces; *and when I had weighed them I* k *the Earth, and bak'd it in several small* rthen *Dishes in an Oven; and when I* d *so done, I found the Earth wanted a* und *and a halfe of what it was former-*, *yet I was not satisfi'd, doubting the* rth *was not dry: I put it into an Oven* : *Second Time, (after the* Bread *was* awn.) *and after I had taken it out and* ighed *it, I found it to be the Same* eight. *So I Suppose there was no Moisture* ft *in the Earth. Neither do I think that* e *Pound and Half that was wanting was* rawn *away by the Cucumber but a great* rt *of it in the Ordering was in Dust (and* e *like) wasted: (the Cucumbers are kept* themselves, *lest You should send for the.)* It yet in this Tryal, *Eleutherius*, it appears that though some of the Earth, rather the dissoluble Salt harbour'd in , were wasted, the main Body of the lant consisted of Transmuted Water. nd I might add, that a year after I us'd the formerly mentioned Experiment, touching large Pompions, to e reiterated, with so good success, that my memory does not much mis-inform me, it did not only much surpass

any

any that I made before, but seem strangely to conclude what I am plea ing for; though (by reason I have unha pily lost the particular Account my G diner writ me up of the Circumstances dare not insist upon them. The like E periment may be as conveniently try with the seeds of any Plant, who growth is hasty, and its size Bulky. Tobacco will in These Cold Climat Grow well in Earth undung'd, it wou not be amiss to make a Tryal with i for 'tis an annual Plant, that arises whe it prospers, sometimes as high as a T Man, and I have had leaves of it in n Garden neer a Foot and a Halfe broa But the next time I Try this Exper ment, it shall be with several seeds of t same sort, in the same pot of Earth, th so the event may be the more Conspic ous. But because every Body has n Conveniency of time and place for th Experiment neither, I made in m Chamber, some shorter and mo Expeditious Tryals. I took a Top Spearmint, about an Inch Long, an put it into a good Vial full of Sprin water, so as the upper part of the Mi was above the neck of the Glass, an th

ie lower part Immers'd in the Water; ithin a few Dayes this Mint began to oot forth Roots into the Water, and diſplay its Leaves, and aſpire upards; and in a ſhort time it had nuerous Roots and Leaves, and theſe ery ſtrong and fragrant of the Odour f the Mint. but the Heat of my Chamer, as I ſuppoſe, kill'd the Plant when was grown to have a pretty thick talk, which with the various and raified Roots, which it ſhot into the Vater as if it had been Earth, preented in its Tranſparent Flower-pot a pectacle not unpleaſant to behold. The ike I try'd with ſweet Marjoram, and found the Experiment ſucceed alſo, hough ſomewhat more ſlowly, with Balm and Peniroyal, to name now no ther Plants. And one of theſe Vegeables, cheriſh'd only by Water, having obtain'd a competent Growth, I did, or Tryals ſake, cauſe to be Diſtill'd in ſmall Retort, and thereby obtain'd ome Phlegme, a little Empyreumatiall Spirit, a ſmall Quantity of aduſt Oyl, and a *Caput mortuum*; which appearing to be a Coal, I concluded it to conſiſt of Salt and Earth: but the

the Quantity of it was so small, tha I forbore to Calcine it. The Water us'd to nourish this Plant was not shift ed nor renewed; and I chose Spring water rather than Rain-water, becaus the latter is more discernably a kind o πανσπερμία, which, though it be granted t be freed from grosser Mixtures, seem yet to Contain in it, besides th Steams of several Bodies wandering i the Air, which may be suppos'd to im pregnate it, a certain Spirituous Sub stance, which may be Extracted out o it, and is by some mistaken for the Spi rit of the World Corporify'd, upon what Grounds, and with what Probabi lity, I may elsewhere perchance, but must not now, Discourse to you.

But perhaps I might have sav'd a great part of my Labour. For I finde that *Helmont* (an Author more confi derable for his Experiments, than many Learned men are pleas'd to think him) having had an Opportunity to prose cute an Experiment much of the same nature with those I have been now speaking of, for five Years together, obtain'd at the end of that time so no table a Quantity of Transmuted Water, that

at I ſhould ſcarce Think it fit to have
s Experiment, and Mine Mention'd
gether, were it not that the Length of
me Requiſite to this may deterr the
riofity of ſome, and exceed the lea-
re of Others; and partly, that ſo Para-
xical a Truth as that which theſe Ex-
riments ſeem to hold forth, needs to
Confirm'd by more Witneſſes than
e, eſpecially ſince the Extragavancies
d Untruths to be met with in *Helmonts*
reatiſe of the Magnetick Cure of
ounds, have made his Teſtimonies
ſpected in his other Writings, though
to ſome of the Unlikely matters of
act he delivers in them, I might ſafely
ndertake to be his Compurgator. But
at Experiment of his which I was
entioning to You, he ſaies, was this.
e took 200 pound of Earth dry'd in
n Oven, and having put it into an Ear-
nen Veſſel and moiſten'd it with Rain
ater, he planted in it the Trunk of a
illow tree of five pound Weight; this
e Water'd, as need required, with
ain or with Diſtill'd Water; and to
eep the Neighbouring Earth from
tting into the Veſſel, he employ'd
plate of Iron tinn'd over and per-

forated with many holes. Five years be ing efflux'd, he took out the Tree an weighed it, and (with computing th leaves that fell during four Autumnes he found it to weigh 169 pound, an about three Ounces. And Having a gain Dry'd the Earth it grew in, h found it want of its Former Weight c 200 Pound, about a couple only Ounces; ſo that 164 pound of th Roots, Wood, and Bark, which Cor ſtituted the Tree, ſeem to have Sprun from the VVater. And though it ap pears not that *Helmont* had the Curi ſity to make any *Analyſis* of this Plan yet what I lately told You I did One of the Vegetables I nouriſh'd wi Water only, will I ſuppoſe keep Yo from Doubting that if he had Diſtill this Tree, it would have afforded hi the like Diſtinct Subſtances as anothe Vegetable of the ſame kind. *I* nee not Subjoyne that I had it alſo in m thoughts to try how Experiments to th ſame purpoſe with thoſe I related t You would ſucceed in other Bodies tha Vegetables, becauſe importunate Avo cations having hitherto hinder'd m from putting my Deſign in Practiſe,

ca

in yet ſpeak but Conjecturally of the
ıccefs : but the beſt is, that the Expe-
ments already made and mention'd
you need not the Aſſiſtance of new
nes, to Verifie as much as my pre-
nt task makes it concern me to prove
y Experiments of this Nature.

One would ſuſpect (ſaies *Eleutheri-*
after his long ſilence) by what You
ıve been diſcourſing, that You are not
r from *Helmonts* Opinion about the
rigination of Compound Bodies, and
erhaps too diſlike not the Arguments
hich he imploys to prove it.

VVhat *Helmontian* Opinion , and
hat Arguments do you mean (askes
arneades)

VVhat you have been Newly Diſ-
ourſing (replies *Eleutherius*) tells us,
ıat You cannot but know that this bold
ıd Acute Spagyriſt ſcruples not to Aſ-
ert that all mixt Bodies ſpring from one
lement; and that Vegetables, Ani-
ıals, Marchaſites, Stones, Metalls, &c.
re Materially but ſimple VVater diſ-
uis'd into theſe Various Formes, by
he plaſtick or Formative Vertue of their
eeds. And as for his Reaſons you may
ind divers of them ſcatter'd up and

down his writings; the considerabl'st of which seem to be these three; The Ultimate Reduction of mixt Bodies into Insipid Water, the Vicissitude of the supposed Elements, and the production of perfectly mixt Bodies out of simple VVater. And first he affirmes that the *Sal circulatus Paracelsi*, or his Liquor *Alkahest*, does adequately resolve Plants, Animals, and Mineralls into one Liquor or more, according to their several internall Disparities of Parts, (without *Caput mortuum*, or the Destruction of their seminal Vertues;) and that the *Alkahest* being abstracted from these Liquors in the same weight and Vertue wherewith it Dissolv'd them, the Liquors may by frequent Cohobation from chalke or some other idoneous matter, be Totally depriv'd of their seminal Endowments, and return at last to their first matter, Insipid VVater: some other wayes he proposes here and there to divest some particular Bodies of their borrow'd shapes, and make them remigrate to their first Simplicity. The second Topick whence *Helmont* drawes his Arguments, to prove VVater to be the Material cause of Mixt Bodies, I tol-

You

ou was this, that the other ſuppos'd lements may be tranſmuted into one other. But the Experiments by him re and there produc'd on this Occaon, are ſo uneaſie to be made and to judg'd of, that I ſhall not inſiſt on em; not to mention, that if they were anted to be true, his Inference from em is ſomewhat diſputable; and therefe I ſhall paſs on to tell You, That , in his Firſt Argument, our Paradoxi- Author endeavours to prove Wa- r the Sole Element of Mixt Bodies, their Ultimate Reſolution, when his *Alkahest*, or ſome other conquering gent, the Seeds have been Deſtroy'd, ich Diſguis'd them; or when by time oſe ſeeds are Weari'd, or Exantlated, unable to Act their Parts upon the age of the Univerſe any Longer: So his Third Argument he Endeavours evince the ſame Concluſion, by the nſtitution of Bodies which he aſſerts be nothing but Water Subdu'd by minal Vertues. Of this he gives here & ere in his VVritings ſeveral Inſtances, to Plants and Animals; but divers of em being Difficult either to be try'd or be Underſtood, and others of them

being not altogether Unobnoxious t
Exceptions, I think you have singl'
out the Principal and less Questionab
Experiment when you lately mention'
that of the Willow Tree. And havin
thus, Continues *Eleutherius*, to Answe
your Question, given you a Summar
Account of what I am Confident, Yo
know better than I do, I shall be ver
glad to receive Your Sence of it, if th
giving it me will not too much Divei
You from the Prosecution of your Di
course.

That *If* (replies *Carneades*) was nc
needlesly annex'd: for thorowly to ex
amine such an Hypothesis and such Ar
guments would require so many Cor
siderations, and Consequently so muc
time, that I should not now have th
Leasure to perfect such a Digression, an
much less to finish my Principal Dis
course. Yet thus much I shall tell Yo
at present, that you need not fear m
rejecting this Opinion for its Novelty
since, however the *Helmontians* may i
complement to their Master pretend i
to be a new Discovery, Yet though th
Arguments be for the most part his, th
Opinion it self is very Antient: For *Di*
ogenes

enes Laertius and divers other Authors
eak of *Thales*, as the first among the
ræcians that made disquisitions upon
ture. And of this *Thales*, I Remember,
ully informs us, that he taught all things
ere at first made of Water. And it
ems by *Plutarch* and *Justin Martyr*,
at the Opinion was Ancienter than he:
or they tell us that he us'd to defend
s Tenent by the Testimony of *Homer*.
nd a Greek Author, the (*Scholiast* of
pollonius) upon these VVords

* De Natura Deorum

Ἐξ ἰλύος ἐβλάστησε χθὼν ἅπασα.

Argonaut. 4.

The Earth of Slime was made,

ffirms, (out of *Zeno*) that the *Chaos*,
hereof all things were made, was, ac-
ording to *Hesiod*, VVater; which, set-
ng first, became Slime, and then con-
ens'd into solid Earth. And the same
pinion about the Generation of Slime
eems to have been entertain'd by *Or-
heus*, out of whom one of the Antients
ites this Testimony,

Athenagoras.

Ἐκ τοῦ ὕδατος ἰλὺς κατέση.

Of Water Slime was made.

Universarum rerum primordia diversa esse, faciendi autem mundi initium aquam. *Strabo Geograph. lib. 15. circa medium.*

It seems also by what is delivered in *Strabo* out of another Author concerning the *Indians*, That they likewise held that all things had differing Beginnings but that of which the World was made was Water. And the like Opinion has been by some of the Antients ascrib'd to the *Phœnicians*, from whom *Thales* himself is conceiv'd to have borrow'd it; as probably the Greeks did much of Theologie, and, as I am apt to think, of their Philosophy too; since the Devising of the Atomical *Hypothesis* commonly ascrib'd to *Leucippus* and his Disciple *Democritus*, is by Learned Men attributed to one *Moschus* a *Phœnician*. And possibly the Opinion is yet antienter than so. For 'tis known that the *Phœnicians* borrow'd most of their Learning from the *Hebrews*. And among those that acknowledge the Books of *Moses*, many have been inclin'd to think Water to have been the Primitive and Universal Matter, by perusing the Beginning of *Genesis*, where the Waters seem to be mention'd as the Material Cause, not only of Sublunary Compound Bodies, but of all those that make up the Universe; whose Component Parts did orderly, as

it

vere, emerge out of that vaſt Abyſſe, the Operation of the Spirit of God, o is ſaid to have been moving Him-f, as hatching Females do, (as the O-inal מרחפת, *Merahephet*, is ſaid to Deuter. 32. 11. port, and it ſeems to ſignifie in one the two other places, wherein alone I Jerem. ve met with it in the Hebrew Bible) 23. 9. on the Face of the Waters; which ing, as may be ſuppos'd, Divinely Im-egnated with the ſeeds of all things, ere by that productive Incubation ualify'd to produce them. But you, I reſume, Expect that I ſhould Diſcourſe f this Matter like a Naturaliſt, not a hilologer. Wherefore I ſhall add, to ountenance *Helmonts* Opinion, That hereas he gives not, that I remember, ny Inſtance of any Mineral Body, nor arce of any Animal, generated of Wa-er, a French Chymiſt, *Monſieur de Rohas*, has preſented his Readers an Ex-periment, which if it were punctually uch as he has deliver'd it, is very Nota-le. He then, Diſcourſing of the Genera-ion of things according to certain Chy-nical and Metaphorical Notions (which confeſs are not to me Intelligible) ſets down, among divers Speculations not per-

pertinent to our Subject, the following Narrative, which I shall repeat to you the sence of in English, with as little variation from the Literal sence of the French words, as my memory will enable me. *Having* (saies he) *discern'd such great Wonders by the Natural Operation of Water, I would know what may be done with it by Art Imitating Nature. Wherefore I took Water which I well knew not to be compounded, nor to be mix'd with any other thing than that Spirit of Life* (whereof he had spoken before) *and with a Heat Artificial, Continual and Proportionate, I prepar'd and dispos'd it by the above mention'd Graduations of Coagulation, Congelation, and Fixation, untill it was turn'd into Earth, which Earth produc'd Animals, Vegetables and Minerals. I tell not what Animals, Vegetables and Minerals, for that is reserv'd for another Occasion: but the Animals did Move of themselves, Eat, &c. —and by the true Anatomie I made of them, I found that they were compos'd of much Sulphur, little Mercury, and less Salt. —The Minerals began to grow and increase by converting into their own Nature one part of the Earth thereunto dispos'd; they were solid and heavy.*

eaby. And by this truly Demonstrative cience, namely Chymistry, I found that hey were compos'd of much Salt, little Sulhur, and less Mercury.

But (saies *Carneades*) I have some uspitions concerning this strange Reition, which make me unwilling to Delare an Opinion of it, unless I were itisfied concerning divers Material ircumstances that our Author has left nmentioned; though as for the Generaion of Living Creatures, both Vegetale and Sensitive, it needs not seem Inredible, since we find that our common vater (which indeed is often Impregnated with Variety of Seminal Principles and Rudiments) being long kept in quiet place will putrifie and stink, and hen perhaps too produce Mos and litle Worms, or other Insects, according to the nature of the Seeds that were lurking in it. I must likewise desire you to take Notice, that as *Helmont* gives us no Instance of the Production of Minerals out of Water, so the main Argument that he employ's to prove that they and other Bodies may be resolv'd into water, is drawn from the Operations of his *Alkahest*, and consequently cannot be

be satisfactorily Examin'd by You and Me.

Yet certainly (saies *Eleutherius*) You cannot but have somewhat wonder'd as well as I, to observe how great a share of Water goes to the making up of Divers Bodies, whose Disguises promise nothing neer so much. The Distillation of Eeles, though it yielded me some Oyle, and Spirit, and Volatile Salt, besides the *Caput mortuum*, yet were all these so disproportionate to the Phlegm that came from them, (and in which at first they boyl'd as in a Pot of Water) that they seem'd to have bin nothing but coagulated Phlegm, which does likewise strangely abound in Vipers, though they are esteem'd very hot in Operation, and will in a Convenient Air survive some dayes the loss of their Heads and Hearts, so vigorous is their Vivacity. Mans Bloud it self as Spirituous, and as Elaborate a Liquor as 'tis reputed, does so abound in Phlegm, that, the other Day, Distilling some of it on purpose to try the Experiment (as I had formerly done in Deers Bloud) out of about seven Ounces and a halfe of pure Bloud we drew neere six Ounces of Phlegm, before any of

the more operative Principles began ariſe and Invite us to change the Re-civer. And to ſatisfie my ſelf that ſome theſe Animall Phlegms were void e-ough of Spirit to deſerve that Name, would not content my ſelf to taſte iem only, but fruitleſly pour'd on them id Liquors, to try if they contain'd ny Volatile Salt or Spirit, which (had iere been any there) would probably ave diſcover'd it ſelf by making an bullition with the Affuſed Liquor. And ow I mention Corroſive Spirits, I am inded to Inform you, That though hey ſeem to be nothing elſe but Fluid alts, yet they abound in Water, as you nay Obſerve, if either you Entangle, nd ſo Fix their Saline Part, by making hem Corrode ſome idoneous Body, or elſe if you mortifie it with a contrary alt; as I have very manifeſtly Ob-erv'd in the making a Medicine ſome-what like *Helmont*'s *Balſamus Samech*, with Diſtill'd Vinegar inſtead of Spirit of Wine, wherewith he prepares it: For you would ſcarce Beleeve (what I have lately Obſerv'd) that of that acid Spirit, the Salt of Tartar, from which it is Diſtill'd, will by mortifying and re-

taining

taining the acid Salt turn into worthl
Phlegm neere twenty times its weigh
before it be so fully Impregnated as
rob no more Distill'd Vinegar of
Salt. And though Spirit of Wine Exqu
sitely rectify'd seem of all Liquors to
the most free from Water, it being
Igneous that it will Flame all aw
without leaving the least Drop behin
it, yet even this Fiery Liquor is
Helmont not improbably affirm'd,
case what he relates be True, to be M
terially Water; under a Sulphureo
Disguise: For, according to him, in t
making that excellent Medicine, *Paracel*
sus his *Balsamus Samech*, (which is n
thing but *Sal Tartari* dulcify'd by Disti
ling from it Spirit of Wine till the Sa
be sufficiently glutted with its Sulphu
and till it suffer the Liquor to be draw
off, as strong as it was pour'd on) whe
the Salt of Tartar from which it is D
still'd hath retain'd, or depriv'd it of th
Sulphureous parts of the Spirit of Wine
the rest, which is incomparably th
greater part of the Liquor, will remi
grate into Phlegm. I added that Claus
[*In case what he Relates be True*] becaus
I have not as yet sufficiently try'd it m
self.

lf. But not only ſomething of Expe-
ment keeps me from thinking it, as
any Chymiſts do, abſurd, (though I
ave as well as they, in vain try'd it with
rdinary Salt of Tartar) but beſides
at *Helmont* often Relates it, and draws
onſequences from it; A Perſon noted
or his Soberneſs and Skill in Spagyrical
reparations, having been askt by me,
Whether the Experiment might not be
ade to ſucceed, if the Salt and Spirit
ere prepar'd according to a way ſuit-
ble to my Principles, he affirm'd to me,
hat he had that way, I propos'd, made
Helmont's Experiment ſucceed very well,
vithout adding any thing to the Salt
nd Spirit. But our way is neither ſhort
or Eaſie.

I have indeed (ſaies *Carneades*) ſome-
imes wonder'd to ſee how much
Phlegme may be obtain'd from Bodies
y the Fire. But concerning that Phlegme
may anon have Occaſion to note ſome-
hing, which I therefore ſhall not now
nticipate. But to return to the Opinion
f *Thales*, and of *Helmont*, I conſider,
hat ſuppoſing the *Alkaheſt* could re-
duce all Bodies into water, yet whether
hat water, becauſe inſipid, muſt be Ele-
mentary

mentary, may not groundlesly be dou
ed; For I remember the Candid
Eloquent *Petrus Laurembergius* in
Notes upon *Sala*'s Aphorismes affirm
that he saw an insipid *Menstruum* t
was a powerfull Dissolvent, and
my Memory does not much mis-inform
me) could dissolve Gold. And the wa
which may be drawn from Quicksil
without Addition, though it be almost
Tastless, You will I believe think o a
differing Nature from simple Wate
especially if you Digest in it Appropri-
ated Mineralls. To which I shall ad
but this, that this Consideration m
be further extended. For I see no N-
cessity to conceive that the Water me-
tion'd in the Beginning of *Genesis*, s
the Universal Matter, was simple a
Elementary Water; since though we
should Suppose it to have been
Agitated Congeries or Heap consisti
of a great Variety of Seminal Prin-
ples and Rudiments, and of other Co-
puscles fit to be subdu'd and Fashion
by them, it might yet be a Body Flu
like Water, in case the Corpuscles
was made up of, were by their Creato
made small enough, and put into such a
actual

ſtuall Motion as might make them
lide along one another. And as we now
y; the Sea conſiſts of Water, (not-
ithſtanding the Saline, Terreſtrial, and
ther Bodies mingl'd with it,) ſuch a
iquor may well enough be called Wa-
r, becauſe that was the greateſt of the
own Bodies whereunto it was like;
hough, that a Body may be Fluid e-
ough to appear a Liquor, and yet con-
in Corpuſcles of a very differing Na-
re, You will eaſily believe, if You but
poſe a good Quantity of Vitriol in
ſtrong Veſſel to a Competent Fire.
or although it contains both Aqueous,
arthy, Saline, Sulphureous, and Metal-
ne Corpuſcles, yet the whole Maſs
ill at firſt be Fluid like water, and
oyle like a ſeething pot.

might eaſily (Continues *Carneades*)
large my ſelf on ſuch Conſiderations,
I were now Oblig'd to give You my
dgment of the *Thaleſian*, and *Hel-
ntian Hypotheſis*. But Whether or no
e conclude that all things were at firſt
enerated of Water, I may Deduce
om what I have try'd Concerning the
rowth of Vegetables, nouriſh'd with
ater, all that I now propos'd to my Self

or need at preſent to prove, namely th
Salt, Spirit, Earth, and ev'n Oyl (thou
that be thought of all Bodies the mo
oppoſite to Water) may be produc'd o
of Water; and conſequently that a Ch
mical Principle as well as a Peripatetic
Element, may (in ſome caſes) be Gen
rated a new, or obtain'd from ſuch a pa
cel of Matter as was not endow'd wi
the form of ſuch a Principle or Eleme
before.

And having thus, *Eleutherius*, Evinc
that 'tis poſſible that ſuch Subſtances
thoſe that Chymiſts are wont to ca
their *Tria Prima*, may be Generate
a new: I muſt next Endeavour to mal
it Probable, that the Operation of t
Fire does Actually (ſometimes) not o
ly divide Compounded Bodies into ſm
Parts, but Compound thoſe Parts aft
a new Manner, whence Conſequentl
for ought we Know, there may Emer
as well Saline and Sulphureous Subſta
ces, as Bodies of other Textures. An
perhaps it will aſſiſt us in our Enquir
after the Effects of the Operations of t
Fire upon other Bodies, to Conſider
little, what it does to thoſe Mixtur
which being Productions of the Art
Man

Man, We best know the Composition of. You may then be pleas'd to take Notice hat though Sope is made up by the Sope-Boylers of Oyle or Grease, and Salt, and Water Diligently Incorporated ogether; yet if You expose the Mass hey Constitute to a Graduall Fire in a Retort, You shall then indeed make a Separation, but not of the same Substanes that were United into Sope, but of thers of a Distant and yet not an Elementary Nature, and especially of an Oyle very sharp and Fœtid, and of a very Differing Quality from that which was Employ'd to make the Sope: so, if you Mingle in a due Proportion, *Sal Armoniack* with Quick-Lime, and Distill hem by Degrees of Fire, You shall not Divide the *Sal Armoniack* from the Quick-Lime, though the one be a Volaile, and the other a Fix'd Substance, ut that which will ascend will be a Spiit much more Fugitive, Penetrant, and inking, than *Sal Armoniack*; and there ill remain with the Quick-Lime all, or ery near all the Sea Salt, that concurr'd o make up the *Sal Armoniack*; conerning which Sea Salt I shall, to satisie You how well it was United to the

Lime, informe You, that I have by ma
king the Fire at length very Vehement
caus'd both the Ingredients to melt i
the Retort it self into one Mass, an
such Masses are apt to Relent in th
Moist Air. If it be here Objected, tha
these Instances are taken from factiti
ous Concretes which are more Com
pounded than those which Nature pro
duces; I shall reply, that besides that
have Mention'd them as much to Illu
strate what I propos'd, as to prove it; i
will be Difficult to Evince that Natur
her self does not make Decompounde
Bodies, I mean, mingle together suc
mixt Bodies, as are already Compounde
of Elementary, or rather of more simpl
ones. For Vitriel (for Instance) thoug
I have sometimes taken it out of Mine
rall Earths, where Nature had withou
any assistance of Art prepar'd it to m
Hand, is really, though Chymists ar
pleas'd to reckon it among Salts, a De
compounded Body Consisting (as I sha
have occasion to declare anon) of
Terrestriall Substance, of a Metal
and also of at least one Saline Body, c
a peculiar, and not Elementary Nature
And we see also in Animals, that thei
bloo

lood may be compos'd of Divers ery Differing Mixt Bodies, since we nd it observ'd that divers Sea-Fowle tast nk of the Fish on which they ordina-ly feed; and *Hippocrates* himself Ob-rves, that a Child may be purg'd by ie Milke of the Nurse, if she have ta-en *Elaterium*; which argues that the urging Corpuscles of the Medicament concurr to make up the Milk of the Iurse; and that white Liquor is gene-ally by Physitians suppos'd to be but lanch'd and alter'd Blood. And I re-iember I have observ'd, not farr from he *Alps*, that at a certain time of the Yeare the Butter of that Country was ery Offensive to strangers, by reason of he rank tast of a certain Herb, whereon he Cows were then wont plentifully o feed. But (proceeds *Carneades*) to ive you Instances of another kind, to hew that things may be obtain'd by he Fire from a Mixt Body that were iot Pre-existent in it, let Me Remind You, that from many Vegetables there nay without any Addition be Obtain'd Glass, a Body, which I presume You will not say was Pre-existent in it, but produc'd by the Fire. To which I shall

add but this one Example more, namel
that by a certain Artificial way of hand
ling Quickſilver, You may withou
Additiou ſeparate from it at leaſt a 5t
or 4th. part of clear Liquor, which wit
an Ordinary Peripatetick would pa
for Water, and which a Vulgar Chy
miſt would not ſcruple to call Phlegm
and which, for ought I have yet ſeen o
heard, is not reducible into Mercury a
gain, and Conſequently is more than
Diſguiſe of it. Now beſides that diver
Chymiſts will not allow Mercury t
have any, or at leaſt any Conſiderabl
Quantity of either of the Ignoble In
gredients, Earth and Water; Beſide
this, I ſay, the great Ponderouſneſs o
Quickſilver makes it very unlikely tha
it can have ſo much Water in it as ma
be thus obtain'd from it, ſince Mercur
weighs 12 or 14 times as much as wa
ter of the ſame Bulk. Nay for a fur
ther Confirmation of this Argument
I will add this Strange Relation, tha
two Friends of mine, the one a Phy
ſitian, and the other a Mathematician
and both of them Perſons of unſuſpe
cted Credit, have Solemnly aſſured me
that after many Tryals they made, to re
duce

uce Mercury into Water, in Order to Philoſophicall Work, upon Gold which yet, by the way, I know prov'd (nſuccesfull) they did once by divers ohobations reduce a pound of Quick-lver into almoſt a pound of Water, and iis without the Addition of any other ubſtance, but only by preſſing the Mer-ıry by a Skilfully Manag'd Fire in urpoſely contriv'd Veſſels. But of ieſe Experiments our Friend (ſaies *arneades*, pointing at the Regiſter of his Dialogue) will perhaps give You a nore Particular Account than it is ne-eſſary for me to do: Since what I have iow ſaid may ſufficiently evince, that he Fire may ſometimes as well alter Bodies as divide them, and by it we nay obtain from a Mixt Body what vas not Pre-exiſtent in it. And how tre we ſure, that in no other Body what we call Phlegme is barely ſe-parated, not Produc'd by the Action of the Fire: Since ſo many other Mixt Bodies are of a much leſs Conſtant, and more alterable Nature, than Mer-cury (by many Tricks it is wont to put upon Chymiſts, and by the Experi-ments I told You of, about an hour

since) Appears to be. But because I shall ere long have Occasion to resume into Consideration the Power of the Fire to produce new Concretes, I shall no longer insist on this Argument at present; only I must mind You, that if You will not dis-believe *Helmonts* Relations, You must confess that the *Tria Prima* are neither ingenerable nor incorruptible Substances; since by his *Archeus* some of them may be produc'd from Bodies that were before of another Denomination; and by the same powerful *Menstruum* all of them may be reduced into insipid Water.

Here *Carneades* was about to pass on to his Third Consideration, when *Eleutherius* being desirous to hear what he could say to clear his second General Consideration from being repugnant to what he seem'd to think the true Theory of Mistion, prevented him by telling him, I somewhat wonder, *Carneades*, that You, who are in so many Points unsatisfied with the Peripatetick Opinion touching the Elements & Mixt Bodies, should also seem averse to that Notion touching the manner of Mistion, wherein the Chymists (though perhaps with-

knowing that they do so) agree with
st of the Antient Philosophers that
ceded *Aristotle*, and that for Reasons
considerable, that divers Modern Na-
alists and Physitians, in other things
favourable enough to the Spagyrists,
in this case side with them against the
mmon Opinion of the Schools If you
ould ask me (continues *Eleutherius*)
at Reasons I mean? I should partly
the Writings of *Sennertus* and other
rned Men, and partly by my own
oughts, be supply'd with more, than
were at present proper for me to In-
t largely on. And therefore I shall
ention only, and that briefly, three or
ur. Of these, I shall take the First from
e state of the Controversie it self, and
e genuine Notion of Mistion, which
ough much intricated by the School-
en, I take in short to be this. *Aristotle*,
t least as many of his Interpreters ex-
ound him, and as indeed he Teaches in
me places, where he professedly Dis-
nts from the Antients, declares Misti-
n to be such a mutual Penetration, and
erfect Union of the mingl'd Elements,
hat there is no Portion of the mixt Bo-
ly, how Minute soever, which does not
contain

contain All, and Every of the Four El ments, or in which, if you pleaſe, a the Elements are not. And I remembe that he reprehends the Miſtion taugl by the Ancients, as too ſlight or groſ for this Reaſon, that Bodies mixt ac cording to their *Hypotheſis*, though the appear to humane Eyes, would n appear ſuch to the acute Eyes of a *Lyn* whoſe perfecter Sight would diſcern the Elements, if they were no otherwil mingled, than as his Predeceſſors woul have it, to be but Blended, not Unitec whereas the Antients, though they di not all Agree about what kind of Bodie were Mixt, yet they did almoſt unani mouſly hold, that in a compounded Bc die, though the *Miſcibilia*, whether Ele ments, Principles, or whatever the pleas'd to call them, were aſſociated i ſuch ſmall Parts, and with ſo much Ex actneſs, that there was no ſenſible Par of the Maſs but ſeem'd to be of the ſam Nature with the reſt, and with th whole; Yet as to the Atomes, or othe Inſenſible Parcels of Matter, whereo each of the *Miſcibilia* conſiſted, they re tain'd each of them its own Nature, be ing but by Appoſition or *Juxta* Poſition

united

nited with the reſt into one Bodie. So at although by vertue of this compoſi-on the mixt Body did perhaps obtain ivers new Qualities, yet ſtill the Ingre-ents that Compounded it, retaining eir own Nature, were by the De-ruction of the *Compoſitum* ſeparable om each other, the minute Parts diſ-gag'd from thoſe of a differing Na-ire, and aſſociated with thoſe of their wn ſort returning to be again, Fire, arth, or Water, as they were before hey chanc'd to be Ingredients of that *ompoſitum.* This may be explain'd Continues *Eleutherius*,) by a piece of Cloath made of white and black threds nterwoven, wherein though the whole iece appear neither white nor black, ut of a reſulting Colour, that is gray, et each of the white and black threds hat compoſe it, remains what it was efore, as would appear if the threds were pull'd aſunder, and ſorted each Colour by it ſelf. This (purſues *Eleuthe-rius*) being, as I underſtand it, the State of the Controverſie, and the *Ariſtotelians* after their Maſter Commonly Defi-ning, that Miſtion is *Miſcibilium altera-torum Unio*, that ſeems to comport much better

better with the Opiuion of the Chy
miſts, than with that of their Adverſa
ries, ſince according to that as the new
ly mention'd Example declares, ther
is but a *Juxta*-poſition of ſeparabl
Corpuſcles, retaining each its own Na
ture, whereas according to the *Ariſtote
lians*, when what they are pleas'd to ca
a mixt Body reſults from the Concourſ
of the Elements, the *Miſcibilia* can
not ſo properly be ſaid to be Alter'd, a
Deſtroy'd, ſince there is no Part in th
mixt Body, how ſmall ſoever, that ca
be call'd either Fire, or Air, or Water
or Earth.

Nor indeed can I well underſtand, how
Bodies can be mingl'd other waies that
as I have declar'd, or at leaſt how they
can be mingl'd, as our Peripatetick
would have it. For whereas *Ariſtotl*
tells us, that if a Drop of Wine be
put into ten thouſand Meaſures of Wa
ter, the Wine being Overpower'd by
ſo Vaſt a Quantity of Water will be
turn'd into it, he ſpeaks to my Appre
henſion, very improbably. For though
One ſhould add to that Quantity of
Water as many Drops of Wine as
would a Thouſand times exceed it all,
yet

t by his Rule the whole Liquor ſhould
ot be a *Crama*, a Mixture of Wine and
Vater, , wherein the Wine would be
redominant , but Water only ; Since
e Wine being added but by a Drop
a time, would ſtill Fall into nothing
it Water, and Conſequently would
e tur'nd into it. And if this would
old in Metals too, 'twere a rare ſe-
et for Goldſmiths, and Refiners; For
y melting a Maſs of Gold, or Silver,
nd by but caſting into it Lead or An-
imony, Grain after Grain , they might
t pleaſure, within a reaſonable Compaſs
f time, turn what Quantity they de-
ire, of the Ignoble into the Noble Me-
alls. And indeed ſince a Pint of wine,
nd a Pint of water, amount to about
a Quart of Liquor, it ſeems manifeſt
o ſenſe, that theſe Bodies doe not
Totally Penetrate one another, as one
would have it; but that each retains its
own Dimenſions; and Conſequently,
that they are by being Mingl'd only di-
vided into minute Bodies, that do but
touch one another with their Surfaces,
as do the Grains, of Wheat, Rye, Bar-
ley, &c. in a heap of ſeverall ſorts of
Corn : And unleſs we ſay, that as

when

when one measure of wheat, for i
stance, is Blended with a hundred me
sures of Barley, there happens only
Juxta-position and Superficial Conta
betwixt the Grains of wheat, and
many or thereabouts of the Grains
Barley; So when a Drop of wine
mingl'd with a great deal of wate
there is but an Apposition of so ma
Vinous Corpuscles to a Corresponde
Number of Aqueous ones; Unless I s
this be said, I see not how that Ab
surdity will be avoyded, whereunto th
Stoical Notion of mistion (namely b
σύγχυσις, or Confusion) was Liable, a
cording to which the least Body ma
be co-extended with the greatest: Sin
in a mixt Body wherein before the El
ments were Mingl'd there was, for In
stance, but one pound of water to te
thousand of Earth, yet according t
them there must not be the least par
of that Compound, that Consisted no
as well of Earth, as water. But I in
sist, Perhaps, too long (saies *Eleuthe
rius*) upon the proofs afforded me by
the Nature of Mistion: Wherefore
will but name Two or Three other Ar
guments; whereof the first shall be
that

at according to *Aristotle* himself, the otion of a mixt Body followes the ature of the Predominant Element, those wherein the Earth prevails, nd towards the Centre of heavy Bo-es. And since many things make it E-dent, that in divers Mixt Bodies the lementary Qualities are as well Active, ough not altogether so much so as in e Elements themselves, it seems not asonable to deny the actual Existence f the Elements in those Bodies where-, they Operate.

To which I shall add this Convin-ing Argument, that Experience mani-sts, and *Aristotle* Confesses it, that the *Miscibilia* may be again separated from mixt Body, as is Obvious in the Chy-nical Resolutions of Plants and Ani-nalls, which could not be unless they lid actually retain their formes in it: or since, according to *Aristotle*, and I hink according to truth, there is but ne common Mass of all things, which e has been pleas'd to call *Materia Pri-na*; And since tis not therefore the Mat-er but the Forme that Constitutes and Discriminates Things, to say that the Elements remain not in a Mixt Bo-

dy,

dy, according to their Formes, but a cording to their Matter, is not to s that they remain there at all; Since a though those Portions of Matter we Earth and water, &c. before they cor curr'd; yet the resulting Body bein once Constituted, may as well be said t be simple as any of the Elements; th Matter being confessedly of the san Nature in all Bodies, and the Element ry Formes being according to this *Hy pothesis* perish'd and abolish'd.

And lastly, and if we will Consul Chymical Experiments, we shall fin the Advantages of the Chymical Do ctrine above the Peripatetick Title littl less than Palpable. For in that Operatio that Refiners call Quartation, whic they employ to purifie Gold, althoug three parts of Silver be so exquisitely mingl'd by Fusion with a fourth Part o Gold (whence the Operation is De nominated) that the resulting Mass ac quires several new Qualities, by vertue of the Composition, and that there is scarce any sensible part of it that is not Compos'd of both the metalls; Yet if You cast this mixture into *Aqua Fortis*, the Silver will be dissolv'd in the

Men-

lenſtruum, and the Gold like a dark or lack Powder will fall to the Bottom it, and either Body may be again duc'd into ſuch a Metal as it was be-re; which ſhews, that it retain'd its Na-re, notwithſtanding its being mixt *per inima* with the other: We likewiſe e, that though one part of pure Silver mingled with eight or ten Parts, or ore, of Lead; yet the Fire will upon e Cuppel eaſily and perfectly ſeparate em again. And that which I would ive you peculiarly Conſider on this Oc-ſion is, that not only in Chymicall natomies there is a Separation made f the Elementary Ingredients, but that me Mixt Bodies afford a very much reater Quantity of this or that Ele-ent or Principle, than of another; as e ſee, that Turpentine and Amber eeld much more Oyl and Sulphur than ey do Water; whereas Wine, which confeſs'd to be a perfectly mixt Bodie, eelds but a little Inflamable Spirit, or ulphur, and not much more Earth; ut affords a vaſt proportion of Phlegm r water: which could not be, if, as the eripateticks ſuppoſe, every, even of he minuteſt Particles, were of the ſame

Nature with the whole, and consequently did contain both Earth and Water and Aire, and Fire; Wherefore as to what *Aristotle* principally, and almost only Objects, that unless his Opinion be admitted, there would be no true and perfect Mistion, but onely Aggregates o Heaps of contiguous Corpuscles, which though the Eye of Man cannot discerne yet the Eye of a *Lynx* might perceiv not to be of the same Nature with on another and with their *Totum*, as th Nature of Mistion requires, if he d not beg the Question, and make Mistio to consist in what other Naturalists den to be requisite to it, yet He at least ob jects That as a great Inconvenienc which I cannot take for such, till h have brought as Considerable Argu ments as I have propos'd to prove th contrary, to evince that Nature make other Mistions than such as I have al lowed, wherein the *Miscibilia* are re duc'd into minute Parts, and Unite as farr as sense can discerne: which i You will not grant to be sufficient for true Mistion, he must have the sam Quarrel with Nature her self, as with hi Adversaries.

Where

Wherefore (Continues *Eleutherius*) cannot but somewhat marvail that *Carneades* should oppose the Doctrine of the Chymists in a Particular, wherein they do as well agree with his old Mistress, Nature, as dissent from his old Adversary, *Aristotle*.

I must not (replies *Carneades*) engage my self at present to examine throughly the Controversies concerning Mistion: And if there were no third thing, but that I were reduc'd to embrace absolutely and unreservedly either the Opinion of *Aristotle*, or that of the Philosophers that went before him, I should look upon the latter, which the Chymists have adopted, as the more defensible Opinion: But because differing in the Opinions about the Elements from both Parties, I think I can take a middle Course, and Discourse to you of Mistion after a way that does neither perfectly agree, nor perfectly disagree with either, as I will not peremtorily define, whether there be not Cases wherein some *Phænomena* of Mistion seem to favour the Opinion that the Chymists Patrons borrow'd of the Antients, I shall only endeavour to shew You that there

are ſome caſes which may keep th
Doubt, which makes up my ſecond Ge
neral Conſideration from being unrea
ſonable.

I ſhall then freely acknowledge t
You (ſaies *Carneades*) that I am not c
ver-well ſatisfi'd with the Doctrine tha
is aſcribed to *Ariſtotle*, concerning Mi
ſtion, eſpecially ſince it teaches tha
the four Elements may again be ſepara
ted from the mixt Body; whereas i
they continu'd not in it, it would no
be ſo much a Separation as a Producti
on. And I think the Ancient Philoſo
phers that Preceded *Ariſtotle*, and Chy
miſts who have ſince receiv'd the ſam
Opinion, do ſpeak of this matter mor
intelligibly, if not more probably, tha
the Peripateticks: but though the
ſpeak Congruouſly enough, to their be
lieving, that there are a certain Numbe
of Primogeneal Bodies, by whoſe Con
courſe all thoſe we call Mixt are Ge
nerated, and which in the Deſtructio
of mixt Bodies do barely part company
and reduce from one another, juſt ſuc
as they were when they came together
yet I, who meet with very few Opini
ons that I can entirely Acquieſce in
muſt

ıuſt confeſs to You that I am inclin'd
› differ not only from the *Ariſtotelians*,
ut from the old Philoſophers and the
hymiſts, about the Nature of Miſtion:
nd if You will give me leave, I ſhall
rieſly propoſe to you my preſent No-
on of it, provided you will look up-
n it, not ſo much as an Aſſertion as an
ypotheſis; in talking of which I do not
›w pretend to propoſe and debate the
hole Doctrine of Miſtion, but to ſhew
ıat 'tis not Improbable, that ſometimes
ingl'd ſubſtances may be ſo ſtrictly u-
ited, that it doth not by the uſuall O-
erations of the Fire, by which Chy-
iſts are wont to ſuppoſe themſelves
› have made the *Analyſis* of mixt Bo-
ies, ſufficiently appear, that in ſuch
odies the *Miſcibilia*, that concurr'd
› make them up, do each of them re-
ain its own peculiar Nature: and by
he *Spagyriſts* Fires may be more eaſily
xtricated and Recover'd, than Al-
er'd, either by a Change of Texture in
he Parts of the ſame Ingredient, or by
n Aſſociation with ſome parts of ano-
her Ingredient more ſtrict than was that
›f the parts of this or that *Miſcibile* a-
ıong themſelves. At theſe words *Eleu.*

having preſs'd him to do what he pro
pos'd,& promis'd to do what he deſir'd
I conſider then (reſumes *Carneades*
that, not to mention thoſe improper
Kinds of Miſtion, wherein *Homogene*
ous Bodies are Joyn'd, as when Water
mingl'd with water, or two Veſſels full
of the ſame kind of Wine with one ano
ther, the miſtion I am now to diſcourſe
of ſeems, Generally ſpeaking, to be but
an Union *per Minima* of any two or
more Bodies of differing Denominati
ons; as when Aſhes and Sand are Colli
quated into Glaſs; or Antimony and Iron
into *Regulus Martis*; or Wine and Water
are mingl'd, and Sugar is diſſolv'd in the
Mixture. Now in this general notion of
Miſtion it does not appear clearly com
prehended, that the *Miſcibilia* or Ingre
dients do in their ſmall Parts ſo retain
their Nature and remain diſtinct in the
Compound, that they may thence be
the Fire be again taken aſunder: For
though I deny not that in ſome Miſ
ſtions of certain permanent Bodies this
Recovery of the ſame Ingredients may
be made; yet I am not convinc'd that
it will hold in all or even in moſt, or that
it is neceſſarily deducible from Chy
mical

nicall Experiments, and the true Notion of Mistion. To explain this a little, I assume, that Bodies may be mingl'd, and that very durably, that are not Elementary, nor have been resolv'd into Elements or Principles, that they may be mingl'd; as is evident in the *Regulus* of Colliquated Antimony, and Iron newly mention'd; and in Gold Coyne, which lasts so many ages; wherein generally the Gold is alloy'd by the mixture of a quantity, greater or lesser, (in our Mints they use about a 12th. part) of either Silver, or Copper, or both. Next, I consider, that there being but one Universal matter of things, as 'tis known that the *Aristotelians* themselves acknowledge, who call it *Materia Prima* (about which nevertheless I like not all their Opinions) the Portions of this matter seem to differ from One Another, but in certain Qualities or Accidents, fewer or more; upon whose Account the Corporeal Substance they belong to receives its Denomination, and is referr'd to this or that particular sort of Bodies; so that if it come to lose, or be depriv'd of those Qualities, though it ceases not to be a Body, yet it ceases

from being that kind of Body as a Plan
or Animal, or Red, Green, Sweet
Sowre, or the like. I conſider that i
very often happens that the ſmal
parts of Bodies cohere together but b
immediate Contact and Reſt, and tha
however, there are few Bodies whoſ
minute Parts ſtick ſo cloſe together, t
what cauſe ſoever their Combination b
aſcrib'd, but that it is poſſible to mee
with ſome other Body, whoſe ſmal
Parts may get between them, and ſ
diſ-joyn them; or may be fitted to co
here more ſtrongly with ſome of them
than thoſe ſome do with the reſt; or a
leaſt may be combin'd ſo cloſely witl
them, as that neither the Fire, no
the other uſual Inſtruments of Chymi
cal Anatomies will ſeparate them
Theſe things being premis'd, I will no
peremptorily deny, but that there may
be ſome Cluſters of Particles, wherei
the Particles are ſo minute, and the
Coherence ſo ſtrict, or both, that when
Bodies of Differing Denominations,
and conſiſting of ſuch durable Cluſters,
happen to be mingl'd, though the
Compound Body made up of them
may be very Differing from either of
the

Ingredients, yet each of the little
ſſes or Cluſters may ſo retain its own
ture, as to be again ſeparable, ſuch
it was before. As when Gold and
ver being melted together in a Due
oportion (for in every Proportion,
e Refiners will tell You that the Ex-
riment will not ſucceed) *Aqua Fortis*
ill diſſolve the Silver, and leave the
old untoucht; by which means, as you
tely noted, both the Metalls may be
cover'd from the mixed Maſs. But
Continues *Carneades*) there are other
luſters wherein the Particles ſtick not
cloſe together, but that they may
eet with Corpuſcles of another De-
omination, which are diſpos'd to be
ore cloſely United with ſome of them,
an they were among themſelves. And
ſuch caſe, two thus combining Cor-
uſcles loſing that Shape, or Size, or Mo-
on, or other Accident, upon whoſe Ac-
ount they were endow'd with ſuch a
eterminate Quality or Nature, each of
hem really ceaſes to be a Corpuſcle of
he ſame Denomination it was before;
nd from the Coalition of theſe there
nay emerge a new Body, as really one,
s either of the Corpuſcles was before
they

they were mingl'd, or , if you pleas
Confounded: Since this Concretion
really endow'd with its own Distir
qualities, and can no more by the Fi
or any other known way of *Analysis*,
divided again into the Corpuscles th
at first concurr'd to make it, than eith
of them could by the same means
subdivided into other Particles. B
(saies *Eleutherius*) to make this mo
intelligible by particular examples;
you dissolve Copper in *Aqua Fortis*,
Spirit of Nitre, (for I remember n
which I us'd, nor do I think it much M
terial) You may by Chrystalizing t
Solution Obtain a goodly Vitriol; whic
though by Vertue of the Composition
have manifestly diverse Qualities, n
to be met with in either of the Ingred
ents, yet it seems that the Nitrous Sp
rits, or at least many of them, may i
this Compounded Mass retain their fo
mer Nature; for having for tryal sak
Distill'd this Vitriol Spirit, there cam
over store of Red Fumes, which b
that Colour, by their peculiar stinke
and by their Sowrness, manifested them
selves to be, Nitrous Spirits; and tha
the remaining Calx continu'd Coppe

ſuppoſe you'l eaſily beleeve. But if u diſſolve *Minium*, which is but Lead wder'd by the Fire, in good Spirit of inegar, and Chryſtalize the Solution, u ſhall not only have a Saccharine lt exceedingly differing from both its gredients; but the Union of ſome irts of the *Menſtruum* with ſome of oſe of the Metal is ſo ſtrict, that the pirit of Vinegar ſeems to be, as ſuch, eſtroy'd; ſince the Saline Corpuſcles ave quite loſt that acidity, upon whoſe ccount the Liquor was call'd Spirit of inegar; nor can any ſuch Acid Parts s were put to the *Minium* be Separaed by any known way from the *Saccharum Saturni* reſulting from them oth; for not only there is no Sowreſs at all, but an admirable Sweetneſs o be taſted in the Concretion; and not nly I found not that Spirit of Wine, vhich otherwiſe will immediately hiſs vhen mingl'd with ſtrong Spirit of Vinegar, would hiſs being pour'd upon *Saccharum Saturni*, wherein yet the Acid Salt of Vinegar, did it Survive, may ſeem to be concentrated; but upon the Diſtillation of *Saccharum Saturni* by it SelfI found indeed a Liquor very Penetrant

netrant, but not at all Acid, and diffe
ing as well in ſmell and other Qualitie
as in taſt, from the Spirit of Vinega
which likewiſe ſeem'd to have left for
of its Parts very firmly united to t
Caput Mortuum, which though of a Le
den Nature was in ſmell, Colour, &
differing from *Minium*; which brin
into my mind, that though two Pow
ders, the one Blew, and the oth
Yellow, may appear a Green mixture
without either of them loſing its ow
Colour, as a good Microſcope has ſome
times inform'd me; yet having mingl'
Minium and *Sal Armoniack*, in a requ
ſite Proportion, and expos'd them in
Glaſs Veſſel to the Fire, the whol
Maſs became White, and the Red Cor
puſcles were deſtroy'd; for though th
Calcin'd Lead was ſeparable from th
Salt, yet you'l eaſily beleeve it did no
part from it in the Forme of a Red
Powder, ſuch as was the *Minium*
when it was put to the *Sal Armoniack*
I leave it alſo to be conſider'd, whether
in Blood, and divers other Bodies, it be
probable, that each of the Corpuſcles
that concurr to make a Compound
Body doth, though ſome of them in
ſome

me Cases may, retain its own Nature
it, so that Chymists may Extricate
ch sort of them from all the others,
herewith it concurr'd to make a Body
one Denomination.

I know there may be a Distinction be-
ixt Matter *Immanent*, when the ma-
rial Parts remain and retain their own
ature in the things materiated, as
me of the Schoolmen speak, (in which
nce Wood, Stones and Lime are the
atter of a House,) and *Transient*, which
the materiated thing is so alter'd, as
receive a new Forme, without being
pable of re-admitting again the Old.
which sence the Friends of this Di-
inction say, that *Chyle* is the matter of
lood, and Blood that of a Humane Bo-
y, of all whose Parts 'tis presum'd to
e the Aliment. I know also that it
ay be said, that of material Princi-
les, some are *Common* to all mixt Bo-
ies, as *Aristotles* four Elements, or
he Chymists *Tria Prima*; others *Pe-
uliar*, which belong to this or that sort
of Bodies; as Butter and a kind of whey
ay be said to be the Proper Principles
of Cream: and I deny not, but that
hese Distinctions may in some Cases
be

be of Use; but partly by what I ha
said already, and partly by what I
to say, You may easily enough guess
what sence I admit them, and discer
that in such a sence they will either
lustrate some of my Opinions, or at le
will not overthrow any of them.

To prosecute then what I was sayi
before, I will add to this purpose, Th
since the Major part of Chymists Cr
dit, what those they call Philosophe
affirme of their Stone, I may repr
sent to them, that though when Cor
mon Gold and Lead are mingled T
gether, the Lead may be sever'd almc
un-alter'd from the Gold; yet if inste
of Gold a *Tantillum* of the Red *Elix*
be mingled with the Saturn, the
Union will be so indissoluble in the pe
fect Gold that will be produc'd by i
that there is no known, nor perhaps n
possible way of separating the diffus
Elixir from the fixed Lead, but the
both Constitute a most permanent Bc
dy, wherein the Saturn seems to hav
quite lost its Properties that made it b
call'd Lead, and to have been rathe
transmuted by the *Elixir*, than barel
associated to it. So that it seems not a
waie

ies neceſſary, that the Bodies that put together *per minima*, ſhould each ain its own Nature; So as when the ſs it Self is diſſipated by the Fire, to more diſpos'd to re-appear in its iſtine Forme, than in any new one, iich by a ſtricter aſſociation of its rts with thoſe of ſome of the other gredients of the *Compoſitum*, than th one another, it may have acqui-d.

And if it be objected, that unleſs the *ypotheſis* I oppoſe be admitted, in ſuch aſes as I have propoſed, there would ot be an Union, but a Deſtruction of ingled Bodies, which ſeems all one s to ſay, that of ſuch Bodies there is o miſtion at all; I anſwer, that though ie Subſtances that are mingl'd remain, nly their Accidents are Deſtroy'd, and iough we may with tolerable Con-ruity call them *Miſcibilia*, becauſe ney are Diſtinct Bodies before they are ut together, however afterwards they re ſo Confounded that I ſhould ra-ner call them Concretions, or Reſult-ig Bodies, than mixt ones; and though, erhaps ſome other and better Account nay be propos'd, upon which the name of

of miſtion may remain ; yet if what have ſaid be thought Reaſon, I ſhall n wrangle about words, though I think fitter to alter a Terme of Art, than r ject a new Truth , becauſe it ſuits n with it. If it be alſo Objected that th Notion of mine, concerning miſtion though it may be allow'd, when B dies already Compounded are put to b mingl'd; yet it is not applicable to tho miſtions that are immediately made the Elements, or Principles themſelve I Anſwer in the firſt place, that I her Conſider the Nature of miſtion ſome what more Generally, than the Chy miſts ; who yet cannot deny that ther are oftentimes Mixtures, and thoſe ver durable ones, made of Bodies that ar not Elementary. And in the nex place, that though it may be probably pretended that in thoſe Mixtures tha are made immediately of the Bodies that are call'd Principles or Elements the mingl'd Ingredients may better retain their own Nature in the Compounded Maſs, and be more eaſily ſeparated from thence; yet, beſides that It may be doubted, whether there be any ſuch Primary Bodies, I ſee not why the

reaſon

eaſon I alledg'd, of the deſtructibility the Ingredients of Bodies in General, ay not ſometimes be Applicable to lt, Sulphur, or Mercury; 'till it be ewn upon what account we are to be- eve them Priviledged. And however, f you pleaſe but to recall to mind, to hat purpoſe I told you at Firſt, I meant ſpeak of Miſtion at this Time) you ll perhaps allow, that what I have hi- erto Diſcourſed about it, may not on- give ſome Light to the Nature of it in neral, (eſpecially when I ſhall have an pportunity to Declare to you my oughts on that ſubject more fully) but ay on ſome Occaſions alſo be Service- ble to me in the Inſuing Part of this iſcourſe.

But to look back now to that part our Diſcourſe, whence this Excurſion oncerning Miſtion has ſo long diverted , though we there Deduc'd, from the ffering Subſtances obtained from a lant nouriſhed only with Water, and om ſome other things, that it was not eceſſary that nature ſhould alwaies ompound a Body at firſt of all ſuch dif- ring bodies as the fire could after- ards make it afford; yet this is not all

that may be collected from thoſe Expe
riments. For from them there ſeems al
ſo Deducible ſomething that Subver
an other Foundation of the Chymic
Doctrine. For ſince that (as we hav
ſeen) out of fair Water alone, not onl
Spirit, but Oyle, and Salt, and Eart
may be Produced; It will follow th
Salt and Sulphur are not Primogene
Bodies, and principles, ſince they a
every Day made out of plain Water b
the Texture which the Seed or Semin
principle of plants put it into. And th
would not perhaps ſeem ſo ſtrange,
through pride or negligence, We we
not Wont to Overlook the Obviou
and Familiar Workings of Nature; F
if We conſider what ſlight Qualitie
they are that ſerve to denominate on
of the *Tria Prima*, We ſhall find tha
Nature do's frequently enough wor
as great Alterations in divers parcel
of matter: For to be readily diſſolubl
in water, is enough to make the bod
that is ſo, paſs for a Salt. And yet I ſe
not why from a new ſhufling and Di
poſition of the Component Particle
of a body, it ſhould be much harder fo
Nature to compoſe a body diſſoluble i
Wate

Vater, of a portion of Water that was ot ſo before, than of the Liquid ſubance of an Egg, which will eaſily mix ith Water, to produce by the bare armth of a hatching Hen, Membrans, eathers, Tendons, and other parts, that re not diſſoluble in Water as that Liuid Subſtance was: Nor is the Hardneſs nd Brittleneſs of Salt more difficult for ature to introduce into ſuch a yeelding ody as Water, than it is for her to ake the Bones of a Chick out of the ender Subſtance of the Liquors of an gg. But inſtead of proſecuting this conderation, as I eaſily might, I will proeed, as ſoon as I have taken notice of n objection that lies in my way. For I aſily foreſee it will be alledged, that he above mentioned Examples are all aken from Plants, and Animals, in vhom the Matter is Faſhioned by the laſtick power of the ſeed, or ſomething nalogous thereunto. Whereas the Fire lo's not act like any of the Seminal rinciples, but deſtroyes them all when hey come within its Reach. But to his I ſhall need at preſent to make ut this eaſy Anſwer, That whether it be Seminal Principle, or any other which

fashions that Matter after those various manners I have mentioned to Y
yet 'tis Evident, that either by the Plastick principle Alone, or that and Hea
Together, or by some Other cause capable to contex the matter, it is yet possible that the matter may be Anew contriv'd into such Bodies. And 'tis only for the Possibility of this that I am now contending.

The

THE SCEPTICAL CHYMIST

The Third Part.

WHat I have hitherto Discours'd, *Eleutherius*, (saies his Friend to Him) has, I presume, shew'n You, that a Considering Man may very well question the Truth of those very Suppositions which Chymists as well as Peripateticks, without proving, take for granted; and upon which Depends the Validity of the Inferences they draw from their Experiments. Wherefore having dispatch'd that, which though a Chymist Perhaps will not, yet I do, look upon as the most Important, as well as Difficult, part of my Task, it will now be Seasonable for me to pro-

ceed to the Conſideration of the Exp
riments themſelves, wherein they a
wont ſo much to Triumph and Glor
And theſe will the rather deſerve a ſ
rious Examination, becauſe thoſe th
Alledge them are wont to do it wi
ſo much Confidence and Oſtentatic
that they have hitherto impos'd up
almoſt all Perſons, without excepti
Philoſophers and Phyſitians themſelv
who have read their Books, or hea
them talk. For ſome learned M
have been content rather to belee
what they ſo boldly Affirme, than be
the trouble and charge, to try wheth
or no it be True. Others again, w
have Curioſity enough to Exami
the Truth of what is Averr'd, wa
Skill and Opportunity to do what th
Deſire. And the Generality even
Learned Men, ſeeing the Chymi
(not contenting themſelves with t
Schools to amuſe the World wi
empty words) Actually Perform
vers ſtrange things, and, among the
Reſolve Compound Bodies into ſeve
Subſtances not known by former Ph
loſophers to be contain'd in then
Men I ſay, ſeeing theſe Things, ar

Hearin

earing with what Confidence Chy-
ifts Averr the Subftances Obtain'd
om Compound Bodies by the Fire
be the True Elements, or, (as they
eak) Hypoftatical Principles of them,
e forward to think it but Juft as well
Modeft, that according to the *Logi-
ans* Rule, the Skilfull *Artifts* fhould
e Credited in their own Art; Efpe-
ally when thofe things whofe Nature
ey fo Confidently take upon them
teach others, are not only Productis
ns of their own Skill, but fuch as o-
ners Know not elfe what to make
f.

But though (Continues *Carneades*)
he Chymifts have been able upon fome
r other of the mention'd Accounts, not
nly to Delight but Amaze, and al-
noft to bewitch even Learned Men;
et fuch as You and I, who are not
inpractis'd in the Trade, muft not fuf-
fer our Selves to be impos'd upon by
hard Names, or bold Affertions; nor to be
dazl'd by that Light which fhould but
affift us to difcern things the more clear-
ly. It is one thing to be able to help Na-
ture to produce things, and another
thing to Underftand well the Nature

of the things produc'd. As we see that many Persons that can beget Children, are for all that as Ignorant of the Number and Nature of the parts, especially the internal ones, that Constitute a Childs Body, as they that never were Parents. Nor do I Doubt, but you'l excuse me, if as I thank the Chymists for the things their *Analysis* shews me, so I take the Liberty to consider how many, and what they are, without being astonish't at them; as if, whosoever hath Skill enough to shew me some new thing of his own making had the Right to make them believe whatsoever he pleases to tell them concerning it.

Wherefore I will now proceed to my Third General Consideration which is, That it does not appear, that *Three* is precisely and Universally the Number of the Distinct Substances or Elements, whereinto mixt Bodies are resoluble by the Fire, I mean that 'tis not prov'd by Chymists, that all the Compound Bodies, which are granted to be perfectly mixt, are upon their Chymical *Analysis* divisible each of them into just Three Distinct Substances, neither

ther more nor lefs, which are wont to be lookt upon as Elementary, or may as well be reputed fo as thofe that are ſo reputed. Which laſt Clauſe I ſubjoyne, to prevent your Objecting that ſome of the Subſtances I may have occaſion to mention by and by, are not perfectly Homogeneous, nor Conſequently worthy of the name of Principles. For that which I am now to conſider, is, into how many Differing Subſtances, that may plauſibly paſs for the Elementary Ingredients of a mix'd Body, it may be Analyz'd by the Fire; but whether each of theſe be un-compounded, I reſerve to examine, when I ſhall come to the next General Conſideration; where I hope to evince, that the Subſtances which the Chymiſts not only allow, but aſſert to be the Component Principles of the Body reſolv'd into them, are not wont to be uncompounded.

Now there are two Kind of Arguments (purſues *Carneades*) which may be brought to make my Third Propoſition ſeem probable; one ſort of them being of a more Speculative Nature, and the other drawn from Experience.

rience. To begin then with the firſt
theſe.

But as *Carneades* was going to do
he had ſaid, *Eleutherius* interrupted hi
by ſaying with a ſomewhat ſmiling cou
tenance;

If you have no mind I ſhould think
that the Proverb, *That Good Wits ha*
had Memories, is Rational and Applic
ble to You, You muſt not Forget no
you are upon the Speculative Conſide
rations, that may relate to the Nun
ber of the Elements; that your Self di
not long ſince Deliver and Concec
ſome Propoſitions in Favour of the Ch
mical Doctrine, which I may withou
diſparagement to you think it uneaſi
even for *Carneades* to anſwer.

I have not, replies he, Forgot th
Conceſſions you mean; but I hope too
that you have not forgot neither wit
what Cautions they were made, whe
I had not yet aſſumed the Perſon
am now ſuſtaining. But however,
ſhall to content You, ſo diſcourſe o
my Third general conſideration, as to
let You ſee, That I am not Unmind
ful of the things you would have me re
member.

To

To talk then again according to such inciples as I then made use of, I shall present, that if it be granted rational suppose, as I then did, that the Elements consisted at first of certain small nd primary Coalitions of the minute articles of matter into Corpuscles ve- numerous, and very like each other, t will not be absur'd to conceive, that ich primary Clusters may be of far ore sorts than three or five; and consequently, that we need not suppose, that n each of the compound Bodies we are reating of, there should be found just hree sorts of such primitive Coalitions, as we are speaking of.

And if according to this Notion we allow a considerable number of differing Elements, I may add, that it seems very possible, that to the constitution of one sort of mixt Bodies two kinds of Elementary ones may suffice (as I lately Exemplify'd to you, in that most durable Concrete, Glass,) another sort of Mixts may be compos'd of three Elements, another of four, another of five, and another perhaps of many more. So that according to this Notion, there can be no determinate number assign'd, as

that

that of the Elements, of all ſorts of com pound Bodies whatſoever, it being ver probable that ſome Concretes con ſiſt of fewer, ſome of more Element Nay, it does not ſeem Impoſſible, accor ding to theſe Principles, but that ther may be two ſorts of Mixts, whereof th one may not have any of all the ſam Elements as the other conſiſts of; as w oftentimes ſee two words, whereof th one has not any one of the Letters to b met with in the other; or as we ofter meet with diverſe Electuaries, in which no Ingredient (except Sugar) is com-mon to any two of them. I will not here debate whether there may not be a multitude of theſe Corpuſcles, which by reaſon of their being primary and ſimple, might be called Elementary, if ſeveral ſorts of them ſhould convene to compoſe any Body, which are as yet free, and neither as yet contex'd & entangl'd with primary Corpuſcles of other kinds, but remains liable to be ſubdu'd and faſhion'd by Seminal Principles, or the like powerful and Tranſmuting Agent, by whom they may be ſo connected a-mong themſelves, or with the parts of one of the bodies, as to make the com-

pound

und Bodies, whose Ingredients they
e, resoluble into more, or other Ele-
ents than those that Chymists have
therto taken notice of.

To all which *I* may add, that since it
pears, by what *I* observ'd to you of
e permanency of Gold and Silver,
at even Corpuscles that are not of an
lementary but compounded Nature,
ay be of so durable a Texture, as to
main indissoluble in the ordinary *Ana-*
sis that Chymists make of Bodies by
ie Fire; 'Tis not impossible but that,
ough there were but three Elements,
et there may be a greater number of
odies, which the wonted waies of A-
atomy will not discover to be no Ele-
ientary Bodies.

But, (saies *Carneades*) having thus far,
n compliance to you, talk't conjectural-
y of the number of the Elements, 'tis
ow time to consider, not of how many
Elements it is possible that Nature may
ompound mix'd Bodies, but (at least
s farr as the ordinary Experiments of
Chymists will informe us) of how many
he doth make them up.

I say then, that it does not by these
ufficiently appear to me, that there is
any

any one determinate Number of E
ments to be uniformly met with in
the ſeveral ſorts of Bodies allow'd to
perfectly mixt.

And for the more diſtinct proof
this Propoſition, I ſhall in the firſt pla
Repreſent, That there are divers B
dies, which I could never ſee by fire
vided into ſo many as three Elementa
ſubſtances. I would fain (as I ſaid late
to *Philoponus*) ſee that fixt and noble M
tal we call Gold ſeparated into Sal,
Sulphur and Mercury: and if any m
will ſubmit to a competent forfeiture
caſe of failing, I ſhall willingly in caſe
proſperous ſucceſſe pay for both the M
terials and the charges of ſuch an Exp
riment. 'Tis not, that after what I ha
try'd my ſelf I dare peremptorily den
that there may out of Gold be extracte
a certain ſubſtance, which I cannot hi
der Chymiſts from calling its Tincture
Sulphur; and which leaves the remainir
Body depriv'd of its wonted colour. Nc
am I ſure, that there cannot be draw
out of the ſame Metal a real quick an
running Mercury. But for the Salt
Gold, *I* never could either ſee it, or b
ſatisfied that there was ever ſuch a thin
ſeparated

parated, *in rerum natura*, by the relati- of any credible eye witneſs. And for e ſeveral Proceſſes that Promiſe that ect, the materials that muſt be wrought on are ſomewhat too precious and ſtly to be waſted upon ſo groundleſſe ventures, of which not only the ſuc- ſſe is doubtful, but the very poſſibility not yet demonſtrated. Yet that which oſt deterrs me from ſuch tryalls, is t their chargeableneſs, but their unſa- factorineſſe, though they ſhould ſuc- ed. For the Extraction of this golden lt being in Chymiſts Proceſſes pre- ribed to be effected by corroſive *Men- ruums*, or the Intervention of other Sa- ne Bodies, it will remain doubtfull to a ary perſon, whether the Emergent alt be that of the Gold it ſelf; or of the aline Bodies or Spirits employ'd to repare it; For that ſuch diſguiſes of ſetals do often impoſe upon Artiſts, I m ſure *Eleutherius* is not ſo much a tranger to Chymiſtry as to ignore. I would likewiſe willingly ſee the three principles ſeparated from the pure ſort of Virgin-Sand, from *Oſteocalla*, from re- ned Silver, from Quickſilver, freed from its adventitious Sulphur, from *Venetian* Talck,

Talck, which by long detention in a extreme *Reverberium*, I could but div into ſmaller Particles, not the conſti ent principles; Nay, which, when I c ſed it to be kept, I know not how lo in a Glaſs-houſe fire, came out in the l gure it's Lumps had when put in, thou alter'd to an almoſt *Amethyſtine* colou and from divers other Bodies, which were now unneceſſary to enumera For though I dare not abſolutely affir it to be impoſſible to Analyze theſe B dies into their *Tria Prima*; yet becau neither my own Experiments, nor a competent Teſtimony hath hitherto e ther taught me how ſuch an *Analyſis* m be made, or ſatisfy'd me, that it ha been ſo, I muſt take the Liberty to r frain from beleeving it, till the Chymiſ prove it, or give us intelligible and pr ctical Proceſſes to perform what the pretend. For whilſt they affect that *Æ nigmatical* obſcurity with which the are wont to puzzle the Readers of thei divulg'd Proceſſes concerning the Ana lytical Preparation of Gold or Mercury they leave wary perſons much unſatiſ fyed whether or no the differing Sub ſtances, they promiſe to produce, be tru

ly

the Hypostatical Principles, or only me intermixtures of the divided Bo-es with those employ'd to work upon em, as is Evident in the seeming ıryſtalls of Silver, and those of Mer-ry; which though by some inconside-tely supposed to be the Salts of those etails, are plainly but mixtures of the etalline Bodies, with the Saline parts *Aqua Fortis* or other corrosive Liquors; is evident by their being reducible in-Silver or Quicksilver, as they were efore.

I cannot but Confess (saith *Eleuthe-us*) that though Chymists may upon robable grounds affirme themselves A-le to obtain their *Tria Prima*, from A-imals and Vegetables, yet I have often ondred that they should so confidently retend also to resolve all Metalline and ther Mineral bodies into Salt, Sulphur, nd Mercury. For 'tis a saying almost roverbial, among those Chymists nemselves that are accounted Philoso-hers; and our famous Countryman *Roger Bacon* has particularly adopted it; hat, *Facilius est aurum facere, quam de-truere*. And I fear, with You, that Gold s not the only Mineral from which Chy-

mists are wont fruitlesly to attempt th
separating of their three Principles.
know indeed (continues *Eleutherius*) th
the Learned *Sennertus*, even in that boo
where he takes not upon him to pla
the Advocate for the Chymists, but th
Umpier betwixt them and the Perip
teticks, expresses himself roundly, thu
Salem omnibus inesse (*mixtis scilicet*)
Sennert. lib. de conf. & dissens. pag. 147. *ex iis fieri posse omnibus in resolutionib*
Chymicis versatis notissimum est. An
in the next Page, *Quod de sale dixi*, sai
he, *Idem de Sulphure dici potest*: but b
his favour I must see very good proof
before I beleeve such general Assertion
how boldly soever made; and he tha
would convince me of their truth, mu
first teach me some true and practicabl
way of separating Salt and Sulphur fro
Gold, Silver, and those many differen
sorts of Stones, that a violent Fire doe
not bring to Lime, but to Fusion; an
not only I, for my own part, never sa
any of those newly nam'd Bodies so re
solved; but *Helmont*, who was muc
better vers'd in the Chymical Anatomi
zing of Bodies than either *Sennertus* o
I, has somewhere this resolute passage
Helmon. pag. 409. *Scio* (saies he) *ex arena, silicibus & saxis*

no

non Calcariis, numquam Sulphur aut Mercurium trahi posse; Nay *Quercetanus* himself, though the grand stickler for the *Tria Prima*, has this Confession of the Irresolubleness of Diamonds; *Adamas* (saith he) *omnium factus Lapidum solidissimus ac durissimus ex arctissima videlicet trium principiorum unione ac Cohærentia, quæ nulla arte separationis in solutionem principiorum suorum spiritualium disjungi potest.* And indeed, pursues *Eleutherius*, I was not only glad but somewhat surprized to find you inclined to Admit that there may be a Sulphur and a running Mercury drawn from Gold; for unless you do (as your expression seem'd to intimate) take the word Sulphur in a very loose sence, I must doubt whether our Chymists can separate a Sulphur from Gold: For when I saw you make the experiment that I suppose invited you to speak as you did, I did not judge the golden Tincture to be the true principle of Sulphur extracted from the Body, but an aggregate of some such highly colour'd parts of the Gold, as a Chymist would have called a *Sulphur incombustible*, which in plain English seems to be little better than to call it a Sulphur &

Quercet. apud Billich. in Thessalo redivivo, pag. 99.

no Sulphur. And as for Metalline Mercuries, I had not wondred at it, though you had expreſſed much more ſeverity in ſpeaking of them: For I remember that having once met an old and famous Artiſt, who had long been (and ſtill is) Chymiſt to a great Monarch, the repute he had of a very honeſt man invited me to deſire him to tell me ingenuouſly whether or no among his many labours, he had ever really extracted a true and running Mercury out of Metalls; to which queſtion he freely replyed, that he had never ſeparated a true Mercury from any Metal; nor had ever ſeen it really done by any man elſe. And though Gold is, of all Metalls, That, whoſe Mercury Chymiſts have moſt endeavoured to extract, and which they do the moſt brag they have extracted; yet the Experienced *Angelus Sala*, in his *Spagyrical* account of the ſeven *Terreſtrial* Planets (that is the ſeven metalls) affords us this memorable Teſtimony, to our preſent purpoſe; *Quanquam* (ſaies he) *&c. experientia tamen (quam ſtultorum Magiſtram vocamus) certe Comprobavit, Mercurium auri adeo fixum, maturum, & arcte cum reliquis ejuſdem corporis ſubſtantiis conjungi,*

onjungi, ut nnllo modo retrogredi poſſit. To which he ſub-joynes that he himſelf had ſeen much Labour ſpent upon that Deſign, but could never ſee any ſuch Mercury produc'd thereby. And I eaſily beleeve what he annexes; *that he had often ſeen Detected many tricks and Impoſtures of Cheating Alchymiſts*. For, the moſt part of thoſe that are fond of ſuch *Charlatans*, being unskilful or Credulous, or both, 'tis very eaſie for ſuch as have ſome Skill, much craft, more boldneſs, and no Conſcience, to impoſe upon them; and therefore, though many profes'd *Alchymiſts*, and divers Perſons of Quality have told me that they have made or ſeen the Mercury of Gold, or of this or that other Metal; yet I have been ſtill apt to fear that either theſe perſons have had a Deſign to deceive others; or have had not Skill and circumſpection enough to keep themſelves from being deceived.

You recall to my mind (ſaies *Carneades*) a certain Experiment I once devis'd, innocently to deceive ſome perſons and let them and others ſee how little is to be built upon the affirmation of thoſe that are either unskilfull

or unwary, when they tell us they have seen *Alchymists* make the Mercury of this or that Metal; and to make this the more evident, I made my Experiment much more Slight, Short and Simple than the Chymists usuall processes to Extract Metalline Mercuries; which Operations being commonly more Elaborate and Intricate, and requiring a much more longer time, give the *Alchymists* greater opportunity to Cozen, and Consequently are more Obnoxious to the Spectators suspition. And that wherein I endeavour'd to make my Experiment look the more like a True *Analysis*, was that I not only pretended as well as others to extract a Mercury from the Metal I wrought upon, but likewise to separate a large proportion of manifest and inflamable Sulphur. I take then, of the filings of Copper, about a Drachme or two; of common sublimate, powder'd, the like Weight; and *Sal Armoniack* near about as much as of Sublimate; these three being well mingl'd together I put into a small Vial with a long neck, or, which I find better, into a Glass Urinall, which (having first stopped it with Cotton) to avoid

the

the Noxious Fumes, I approach by degrees to a competent Fire of well kindled coals, or (which looks better, but more endangers the Glass) to the Flame of a candle; and after a while the bottom of the Glass being held Just upon the Kindled Coals, or in the flame, You may in about a quarter of an Hour, or perchance in halfe that time, perceive in the Bottom of the Glass some running Mercury; and if then You take away the Glass and break it, You shall find a Parcel of Quicksilver, Perhaps altogether, and perhaps part of it in the pores of the Solid Mass; You shall find too, that the remaining Lump being held to the Flame of the Candle will readily burn with a greenish Flame, and after a little while (perchance presently) will in the Air Acquire a Greenish Blew, which being the Colour that is ascrib'd to Copper, when its Body is unlocked, 'Tis easie to perswade Men that this is the True Sulphur of *Venus*, especially since not only the Salts may be Suppos'd partly to be Flown away, and partly to be Sublim'd to the upper part of the Glass, whose inside (will

Commonly appear Whitened by them, but the Metal seems to be quite Destroy'd, the Copper no longer appearing in a Metalline Forme, but almost in that of a Resinous Lump; whereas indeed the Case is only this, That the Saline parts of the Sublimate together with the *Sal Armoniack*, being excited and actuated by the Vehement heat fall upon the Copper, (which is a Metal they can more easily corrode, than Silver) whereby the small parts of the Mercury being freed from the Salts that kept them asunder, and being by the heat tumbled up and down after many Occursions, they Convene into a Conspicuous Mass of Liquor; and as for the Salts, some of the more Volatile of them Subliming to the upper part of the Glass, the others Corrode the Copper, and uniting themselves with it do strangely alter and Disguise its Metallick Form, and compose with it a new kind of Concrete inflamable like Sulphur; concerning which I shall not now say any thing, since I can Referr You to the Diligent Observations which I remember Mr. *Boyle* has made concerning this Odde kind of Verdigrease, But Continues

...es *Carneades* smiling, you know I ... not cut out for a Mountebank, and ...refore I will hasten to resume the ...son of a Sceptick, and take up my ...course where You diverted me from ...secuting it.

...n the next place, then, I consider, ...t, as there are some Bodies which ...ld not so many as the three Prin- ...les; so there are many others, that in ...ir Resolution Exhibite more princi- ...s than three; and that therefore the ...rnary number is not that of the Uni- ...rsal and Adequate Principles of Bodies. ... you allow of the Discourse I lately ...ade You, touching the primary Asso- ...ations of the small Particles of matter, ...ou will scarce think it improbable, ...at of such Elementary Corpuscles ...ere may be more sorts than either ...ree, or four, or five. And if you will ...rant, what will scarce be deny'd, that ...orpuscles of a compounded Nature ...ay in all the wonted Examples of ...hymists pass for Elementary, I see not ...hy you should think it impossible, that ...s *Aqua Fortis*, or *Aqua Regis* will make a Separation of colliquated Silver and Gold, though the Fire cannot; so there may

may be ſome Agent found out ſo ſubtle and ſo powerfull, at leaſt in reſpect of thoſe particular compounded Corpuſcles, as to be able to reſolve them into thoſe more ſimple ones, whereof they conſiſt, and conſequently encreaſe the number of the Diſtinct Subſtances, which into the mixt Body has been hitherto thought reſoluble. And if that be true, which I recited to you a while ago out of *Helmont* concerning the Operations of the *Alkaheſt*, which divides Bodies not to other Diſtinct Subſtances, both as to number and Nature, than the Fire does; it will not a little countenance my Conjecture. But confining our ſelves to ſuch waies of Analyzing mix'd Bodies, as are already not unknown to Chymiſts, it may without Abſurdity be Queſtion'd, whether beſides thoſe groſſer Elements of Bodies, which they call Salt Sulphur and Mercury, there may not be Ingredients of a more Subtile Nature, which being extreamly little, and not being in themſelves Viſible, may eſcape unheeded at the Junctures of the Deſtillatory Veſſels, though never ſo carefully Luted. For let me obſerve to you one thing, which though

no

taken notice of by Chymists, may notion of good use in divers Cases Naturalist, that we may well sus-, that there may be severall Sorts of lies, which are not Immediate Ob- s of any one of our senses; since we , that not only those little Corpus- ; that issue out of the Loadstone, l perform the Wonders for which s justly admired; But the *effluviums* Amber, Jet, and other Electricall ncretes, though by their effects upon particular Bodies dispos'd to receive eir Action, they seem to fall under the ognizance of our Sight, yet do they not Electrical immediately Affect any of r senses, as do the bodies, whether inute or greater, that we See, Feel, aste, &c. But, (Continues *Carneades*) cause you may expect I should, as e Chymists do, consider only the sen- le Ingredients of Mixt Bodies, let us w see, what Experience will, even as these, suggest to us.

It seems then questionable enough, hether from Grapes variously order'd here may not be drawn more distinct ubstances by the help of the Fire, than rom most other mixt Bodies. For the Grapes

Grapes themſelves being dryed i
Raiſins and diſtill'd, will (beſides
cali, Phlegm, and Earth) yeeld a conſi
rable quantity of an Empyreuma
Oyle, and a Spirit of a very differ
nature from that of Wine. Alſo the
fermented Juice of Grapes affords o
diſtill'd Liquors than Wine doth.
Juice of Grapes after fermentation
yeeld a *Spiritus Ardens*; which if com
tently rectifyed will all burn away wi
out leaving any thing remaining.
ſame fermented Juice degenerating in
Vinegar, yeelds an acid and corrodi
Spirit. The ſame Juice tunn'd up, arm
it ſelf with Tartar; out of which m
be ſeparated, as out of other Bodie
Phlegme, Spirit, Oyle, Salt and Eart
not to mention what Subſtances may
drawn from the Vine it ſelfe, probabl
differing from thoſe which are ſepar
ted from Tartar, which is a body by
ſelf, that has few reſemblers in th
World. And I will further conſider tha
what force ſoever you will allow this in
ſtance, to evince that there are ſome Bo
dies that yeeld more Elements than o
thers, it can ſcarce be deny'd but that th
Major part of bodies that are diviſibl
int

Elements yeeld more than three. besides those which the Chymists pleased to name Hypostatical, most es contain two others, Phlegme and h, which concurring as well as the to the constitution of Mixts, and be- as generally, if not more, found in r *Analysis*, I see no sufficient cause they should be excluded from the ber of Elements. Nor will it suf- to object, as the *Paracelsians* are nt to do, that the *Tria prima* are the st useful Elements, and the Earth l Water but worthless and unactive; Elements being call'd so in relation to constituting of mixt Bodies, it should upon the account of its Ingrediency, t of its use, that any thing should be irmed or denyed to be an Element: d as for the pretended uselessness of rth and Water, it would be consider'd at usefulness, or the want of it, de- tes only a Respect or Relation to us; d therefore the presence, or absence of , alters not the Intrinsick nature of the ing. The hurtful Teeth of Vipers are r ought I know useless to us, and yet re not to be deny'd to be parts of their odies; and it were hard to shew of what

what greater Use to Us, than Phl
and Earth, are those Undiscern'd S
which our New *Telescopes* discov
Us, in many Blanched places of the
and yet we cannot but acknowl
them Constituent and Consider
great parts of the Universe. Besides
whether or no the Phlegm and Eart
immediately Useful, but necessar
constitute the Body whence they
separated; and consequently, if the
Body be not Useless to us, those
stituent parts, without which it co
not have been That mixt Body, ma
said not to be Unuseful to Us:
though the Earth and Water be no
conspicuously Operative (after sep
tion) as the other three more ac
Principles, yet in this case it will not
amiss to remember the lucky Fable
Menenius Agrippa, of the dangerous Se
tion of the Hands and Legs, and oth
more busie parts of the Body, agai
the seemingly unactive Stomack. And
this case also we may not unfitly apply
that Reasoning of an Apostle, to an
ther purpose; *If the Ear shall say, beca
I am not the Eye, I am not of the Body;
it therefore not of the Body? If the whe*
Bo

ly were Eye, where were the Hearing? If be whole were for hearing, where the Smelling? In a word, since Earth and Water appear, as clearly and as generally as the other Principles upon the resolution of Bodies, to be the Ingredients whereof they are made up; and since they are useful (if not immediately to us, or rather to Physitians) to the Bodies they constitute, and so though in somewhat a remoter way, are serviceable to us; to exclude them out of the number of Elements, is not to imitate Nature.

And on this occasion I cannot but take notice, that whereas the great Argument which the Chymists are wont to employ to vilify Earth and Water, and make them be look'd upon as useless & unworthy to be reckon'd among the Principles of Mixt Bodies, is, that they are not endow'd with Specifick Properties, but only with Elementary qualities; of which they use to speak very slightingly, as of qualities contemptible and unactive: I see no sufficient Reason for this Practice of the Chymists: For 'tis confess'd that Heat is an Elementary Quality, and yet that an almost innumerable company of considerable Things

are

are perform'd by Heat, is manifeſt
them that duly conſider the vario
Phænomena wherein it intervenes as
principall Actor; and none ought leſs
ignore or diſtruſt this Truth than a Ch
miſt. Since almoſt all the operatio
and Productions of his Art are perfor
ed chiefly by the means of Heat. A
as for Cold it ſelf, upon whoſe accou
they ſo deſpiſe the Earth and Water,
they pleaſe to read in the Voyages
our Engliſh and Dutch Navigators
Nova Zembla and other Northern Reg
ons what ſtupendous Things may be e
fected by Cold, they would not perha
think it ſo deſpicable. And not to r
peat what I lately recited to You out
Paracelſus himſelf, who by the help
an intenſe Cold teaches to ſeparate th
Quinteſſence of Wine; I will only no
obſerve to You, that the Conſervatio
of the Texture of many Bodies both a
nimate and inanimate, do's ſo much de
pend upon the convenient motion bot
of their own Fluid and Looſer Parts, &
of the ambient Bodies, whether Air
Water, &c. that not only in human
Bodies we ſee that the immoderate o
unſeaſonable coldneſs of the Air (eſpe
cially

ully when it finds such Bodies over-
ated) do's very frequently discompose
e *Oeconomie* of them, and occasion va-
ety of Diseases; but in the solid and
rable Body of Iron it self, in which
ie would not expect that suddain
old should produce any notable
nange, it may have so great an operati-
n, that if you take a Wire, or other
ender piece of steel, and having
rought it in the fire to a white heat, You
ffer it afterwards to cool leasurely in
ie Air, it will when it is cold be much
f the same hardness it was of before.
Whereas if as soon as You remove it
om the fire, you plunge it into cold wa-
er, it will upon the suddain Refrigera-
ion acquire a very much greater hard-
ess than it had before; Nay, and will be-
ome manifestly brittle. And that you
nay not impute this to any peculiar
Quality in the Water, or other Liquor,
or Unctuous matter, wherein such heated
steel is wont to be quenched that it may
be temper'd; I know a very skilful
Tradesman, that divers times hardens
steel by suddenly cooling it in a Body
that is neither a liquor, nor so much as
moist. A tryal of that Nature I remem-

ker I have seen made. And however b
the operation that Water has upon ste
quenched in it, whether upon the Ac
count of its coldness and moisture, c
upon that of any other of its qualitie
it appears, that water is not alwaies
inefficacious and contemptible a Bod
as our Chymists would have it pass fo
And what I have said of the Efficacy
Cold and Heat, might perhaps be easil
enough carried further by other consid
rations and experiments; were it n
that having been mention'd only upo
the By, I must not insist on it, but pr
ceed to another Subject.

But, (pursues *Carneades*) though
think it Evident, that Earth an
Phlegme are to be reckon'd among th
Elements of most Animal and Vegetabl
Bodies, yet 'tis not upon that Accour
alone, that I think divers Bodies resol
ble into more Substances than thre
For there are two Experiments, that
have sometimes made to shew, that a
least some Mixts are divisible into mor
Distinct Substances than five. The on
of these Experiments, though 'twill b
more seasonable for me to mention
fully anon, yet in the mean time, I shal
te

ll you thus much of it, That out of two istill'd Liquors which pass for Elements of the Bodies whence they are awn, I can without Addition make a ue Yellow and Inflamable Sulphur, otwithstanding that the two Liquors main afterwards Distinct. Of the other xperiment, which perhaps will not be together unworthy your Notice, I ust now give you this particular Account. I had long observ'd, that by the estillation of divers Woods, both in Ordinary, and some unusuall sorts of Vessels, the Copious Spirit that came over, id besides a strong taste, to be met with the Empyreumatical Spirits of many ther Bodies, an Acidity almost like that f Vinegar: Wherefore I suspected, that ough the sowrish Liquor Distill'd, for nstance, from Box-Wood, be lookt upn by Chymists as barely the Spirit of , and therefore as one single Element r Principle; yet it does really consist of wo Differing Substances, and may be ivisible into them; and consequently, hat such Woods and other Mixts as bound with such a Vinegar, may be aid to consist of one Element or Principle, more than the Chymists as yet

are Aware of; Wherefore bethinkir
my ſelf, how the ſeparation of theſe tw
Spirits might be made, I Quickly foun
that there were ſeveral waies of Con
paſſing it. But that of them which I ſha
at preſent mention was this, Havi
Deſtill'd a Quantity of Box-Wood *p*
ſe, and ſlowly rectify'd the ſowriſh Sp
rit, the better to free it both from Oy
and Phlegme, I caſt into this Rectify
Liquor a convenient Quantity of Po
der'd Coral, expecting that the Ac
part of the Liquor, would Corrode t
Coral, and being aſſociated with
would be ſo retain'd by it, that the oth
part of the Liquor, which was not of
acid Nature, nor fit to faſten upon t
Corals, would be permitted to aſcend
lone. Nor was I deceiv'd in my Exp
ctation; For having gently abſtract
the Liquor from the Corals, the
came over a Spirit of a Strong ſmel
and of a taſt very piercing but witho
any ſowrneſs; and which was in diver
qualities manifeſtly different, not on
from a Spirit of Vinegar, but from ſon
Spirit of the ſame Wood, that I pu
poſely kept by me without depriving
of its acid Ingredient. And to ſatisf
yo

ou, that these two Substances were of very differing Nature, I might informe ou of several Tryals that I made, but just not name some of them, because I nnot do so without making some unasonable discoveries. Yet this I shall ll you at present that the sowre Spirit *Box*, not only would, as I just now lated, dissolve Corals, which the her would not fasten on, but being our'd upon Salt of Tartar would immeately boyle and hiss, whereas the other ould lye quietly upon it. The acid pirit pour'd upon *Minium* made a Sugar f Lead, which I did not find the other o do; some drops of this penetrant spiit being mingl'd with some drops of the lew Syrup of Violets seem'd rather to ilute than otherwise alter the colour; hereas the Acid Spirit turn'd the Syrup f a reddish colour, and would probably ave made it of as pure a red, as Acid alts are wont to do, had not its operaion been hindered by the mixture of the ther Spirit. A few drops of the comound Spirit being shaken into a pretty uantity of the infusion of *Lignum Nehriticum*, presently destroyed all the lewish colour, whereas the other Spirit

would not take it away. To all which might be added, that having for trya ſake pour'd fair water upon the Cora that remained in the bottom of the gla wherein I had rectifyed the double ſp rit (if I may ſo call it) that was fi drawn from the Box, I found accordi to my expectation that the Acid Spi had really diſſolved the Corals and h coagulated with them. For by the affu on of fair Water, I Obtain'd a Solu on, which (to note that ſingularity upo the by) was red, whence the Wa being evaporated, there remained a ſ luble Subſtance much like the Ordina Salt of Coral, as Chymiſts are pleas to call that Magiſtery of Corals, whi they make by diſſolving them in cor mon ſpirit of Vinegar, and abſtracti the *Menſtruum ad Siccitatem*. I know n whether I ſhould ſubjoyne on this occ ſion, that the ſimple ſpirit of Box, Chymiſts will have it therefore *Sali* becauſe it has a ſtrong taſt, will furni us with a new kind of *Saline* Bodies, di fering from thoſe hitherto taken notic of. For whereas of the three chief ſor of *Salts*, the *Acid*, the *Alcalizate*, an the *Sulphureous*, there is none th

ſeem

ſeems to be friends with both the other two, as I may, e're it be long, have occaſion to ſhew; I did not find but that the ſimple ſpirit of Box did agree very well (at leaſt as farr as I had occaſion to try it) both with the Acid and the other Salts. For though it would lye very quiet with ſalt of Tartar, Spirit of Urine, and other Bodies, whoſe Salts were either of an Alcalizate or fugitive Nature; yet did not the mingling of Oyle of Vitriol it ſelf produce any hiſſing or Effervescence, which you know is wont to enſue upon the Affuſion of that highly Acid Liquor upon either of the Bodies newly mentioned.

I think my ſelf, (ſaies *Eleutherius*) beholden to you, for this Experiment; not only becauſe I foreſee you will make it helpful to you in the Enquiry you are now upon, but becauſe it teaches us a Method, whereby we may prepare a numerous ſort of new ſpirits, which though more ſimple than any that are thought Elementary, are manifeſtly endow'd with peculiar and powerful qualities, ſome of which may probably be of conſiderable uſe in Phyſick, as well alone as aſſociated with other things; as

one may hopefully gueſs by the redn
of that Solution your ſowre Spirit ma
of Corals, and by ſome other circu
ſtances of your Narrative. And ſuppo
(purſues *Eleutherius*) that you are n
ſo confin'd, for the ſeparation of the
cid parts of theſe compound Spir
from the other, to employ Corals; b
that you may as well make uſe of a
Alcalizate Salt, or of Pearls, or Cra
eyes, or any other Body, upon which co
mon *S*pirit of Vinegar will eaſily wor
and, to ſpeak in an *Helmontian* Phraſ
Exantlate it ſelf.

I have not yet tryed, (ſaies *Carneades*
of what uſe the mention'd liquors may
in Phyſick, either as Medicines or as *Me*
ſtruums: But I could mention now (a
may another time) divers of the trya
that I made to ſatisfy my ſelf of the di
ference of theſe two Liquors. But tha
as I allow your thinking what you new
told me about Corals, I preſume you wi
allow me, from what I have ſaid alread
to deduce this Corollary; That there a
divers compound bodies, which may b
reſolv'd into four ſuch differing *Sub*
ſtances, as may as well merit the nam
of Principles, as thoſe to which the Chy
miſt

ſts freely give it. For ſince they ſcru-
e not to reckon that which I call the
mpound Spirit of Box, for the ſpirit,
as others would have it, the Mercury
that Wood, I ſee not, why the Acid li-
ior, and the other, ſhould not each of
em, eſpecially that laſt named, be lookt
on as more worthy to be called an E-
mentary Principle; ſince it muſt needs
e of a more ſimple nature than the
iquor, which was found to be diviſible
nto that, and the Acid Spirit. And this
urther uſe (continues *Carneades*) may
e made of our experiment to my pre-
ent purpoſe, that it may give us a riſe to
uſpect, that ſince a Liquor reputed by
he Chymiſts to be, without diſpute,
Homogeneous, is by ſo ſlight a way divi-
ſible into two diſtinct and more ſimple
Ingredients, ſome more skilful or hap-
pier Experimenter than I may find a
way either further to divide one of theſe
Spirits, or to reſolve ſome or other, if
not all, of thoſe other Ingredients of
mixt Bodies, that have hitherto paſs'd
among Chymiſts for their Elements or
Principles,

THE

THE SCEPTICAL CHYMIST

The Fourth Part.

AND thus much (ſaies *Carneades*) may ſuffice to be ſaid of the *Number* of the Diſtinct ſubſtances ſeparable from mixt Bodies by the Fire: Wherefore I now proceed to conſider the *nature* of them, and ſhew you, That though they ſeem *Homogeneous* Bodies, yet have they not the purity and ſimplicity that is requiſite to Elements. And I ſhould immediately proceed to the proof of my Aſſertion, but that the Confidence wherewith Chymiſts are wont to call each of the Subſtances we ſpeak of by the name of *Sulphur* or *Mercury*, or the other of the Hypoſta-

tical

ticall Principles, and the intolerab
Ambiguity they allow themselves
their Writings and Expressions, mak
it necessary for me in Order to th
Keeping you either from mistaking m
or thinking I mistake the Controversi
to take Notice to you and complain
the unreasonable Liberty they giv
themselves of playing with Names a
pleasure. And indeed if I were oblig
in this Dispute, to have such regard t
the Phraseology of each particular Chy
mist, as not to Write any thing whic
this or that Author may not pretend
not to contradict this or that sence
which he may give us as Occasion serve
to his Ambiguous Expressions, I shoul
scarce know how to dispute, nor which
way to turn my self. For I find that e-
ven Eminent Writers, (such as *Raymund Lully*, *Paracelsus* and others) do so a-
buse the termes they employ, that as
they will now and then give divers
things, one name; so they will oftentimes
give one thing, many Names; and
some of them (perhaps) such, as do
much more properly signifie some Di-
stinct Body of another kind; nay even
in Technical Words or Termes of Art,
they

tl y refrain not from this Confound-
it Liberty; but will, as I have Ob-
ſe v'd, call the ſame Subſtance, ſome-
ti es the Sulphur, and Sometimes
t]: Mercury of a Body. And now
I peak of Mercury, I cannot but
t e Notice, that the Deſcriptions
tl y give us of that Principle or Ingre-
d nt of mixt Bodies, are ſo intricate,
t it even thoſe that have Endeavour'd
t Poliſh and Illuſtrate the Notions of
t e Chymiſts, are fain to confeſs that
t ey know not what to make of it ei-
t er by Ingenuous Acknowledgments,
c Deſcriptions that are not intelligi-
l e.

I muſt confeſs (ſaies *Eleutherius*) I
l ve, in the reading of *Paracelſus* and o-
t er Chymical Authors, been troubled
t find, that ſuch hard Words and E-
q ivocal Expreſſions, as You juſtly com-
p ain of, do even when they treat of
P rinciples, ſeem to be ſtudiouſly affected
y thoſe Writers; whether to make
t emſelves to be admir'd by their Rea-
ers, and their Art appear more Ve-
erable and Myſterious, or, (as they
would have us think) to conceal from
hem a Knowledge themſelves judge
neſtimable But

But whatever (ſaies *Carneades*) th
Men may promiſe themſelves from
Canting way of delivering the Prin
ples of Nature, they will find the M
jor part of Knowing Men ſo vain,
when they underſtand not what th
read, to conclude, that it is rather t
Writers fault than their own. A
thoſe that are ſo ambitious to be a
mir'd by the Vulgar, that rather th
go without the Admiration of the I
norant they will expoſe themſelves
the contempt of the Learned, tho
ſhall, by my conſent, freely enjoy the
Option. As for the Myſtical Write
ſcrupling to Communicate their Know
ledge, they might leſs to their ow
Diſparagement, and to the trouble
their Readers, have conceal'd it by wr
ting no Books, than by Writing ba
ones. If *Themiſtius* were here, h
would not ſtick to ſay, that Chymiſ
write thus darkly, not becauſe the
think their Notions too precious to b
explain'd, but becauſe they fear that i
they were explain'd, men would diſ
cern, that they are farr from being pre
cious. And indeed, I fear that the chie
Reaſon why Chymiſts have written ſ

ob

ſcurely of their three Principles, may
, That not having Clear and Di-
nct Notions of them themſelves, they
nnot write otherwiſe than Confuſedly
what they but Confuſedly Appre-
nd: not to ſay that divers of them,
ing Conſcious to the Invalidity of
eir Doctrine, might well enough diſ-
rne that they could ſcarce keep them-
lves from being confuted, but by keep-
g themſelves from being clearly un-
rſtood. But though much may be ſaid
Excuſe the Chymiſts when they write
arkly, and Ænigmatically, about the
reparation of their *Elixir*, and Some
w other grand *Arcana*, the divulging
f which they may upon Grounds Plau-
ble enough eſteem unfit; yet when
hey pretend to teach the General Prin-
iples of Natural Philoſophers, this E-
uivocal Way of Writing is not to be
ndur'd. For in ſuch Speculative Enqui-
ies, where the naked Knowledge of
he Truth is the thing Principally aim'd
t, what does he teach me worth thanks
hat does not, if he can, make his No-
ion intelligible to me, but by Myſtical
Termes, and Ambiguous Phraſes dark-
ns what he ſhould clear up; and makes

me

me add the Trouble of gueſſing at t
ſence of what he Equivocally expreſſ
to that of examining the Truth of wh
he ſeems to deliver. And if the ma
ter of the Philoſophers Stone, and t
manner of preparing it, be ſuch Myſt
ries as they would have the World b
lieve them, they may Write Intelli
bly and Clearly of the Principles f
mixt Bodies in General, without D
covering what they call the Gre
Work. But for my part (Continu
Carneades) what my Indignation at t
Un-philoſophical way of teaching Pr
ciples has now extorted from me, s
meant chiefly to excuſe my ſelf, i I
ſhall hereafter oppoſe any Particu
Opinion or aſſertion, that ſome Follo
er of *Paracelſus* or any Eminent Ar
may pretend not to be his Maſters. Fo
as I told you long ſince, I am not O
lig'd to examine private mens writin
(which were a Labour as endleſs s
unprofitable) being only engag'd to e
amine thoſe Opinions about the *Tri
Prima*, which I find thoſe Chymiſts I
have met with to agree in moſt: Ad
I Doubt not but my Arguments agai
their Doctrine will be in great part e
ſy

ly enough applicable ev'n to those rivate Opinions, which they do not so irectly and expresly oppose. And in- eed, that which I am now entering on being the Consideration of the ings themselves whereinto *Spagyrists* solve mixt Bodies by the Fire, if I can ew that these are not of an Elementa- Nature, it will be no great matter hat names these or those Chymists ave been pleased to give them. And I uestion not that to a Wise man, and onsequently to *Eleutherius*, it will be ess considerable to know, what Men lave thought of Things, than what they hould have thought.

In the fourth and last place, then, I onsider, that as generally as Chymists re wont to appeal to Experience, and s confidently as they use to instance he several substances separated by the ire from a Mixt Body, as a sufficient roof of their being its component Ele- nents: Yet those differing Substances re many of them farr enough from Ele- nentary simplicity, and may be yet ook'd upon as mixt Bodies, most of hem also retaining, somewhat at least, if not very much, of the Nature of those

Concretes whence they were forc
I am glad (saies *Eleutherius*) to
the Vanity or Envy of the canting Ch
mists thus discover'd and chastis'd; an
could wish, that Learned Men wo
conspire together to make these de
ding Writers sensible, that they must
longer hope with Impunity to abuse
World. For whilst such Men are qui
ly permitted to publish Books with p
mising Titles, and therein to Assert wh
they please, and contradict others, a
ev'n themselves as they please, with
little danger of being confuted as of
ing understood, they are encourag'd
get themselves a name, at the cost of
Readers, by finding that intelligent M
are wont for the reason newly men
on'd, to let their Books and Them
lone: And the ignorant and credulo
(of which the number is still much gre
ter than that of the other) are forwa
to admire most what they least unde
stand. But if Judicious men skill'd
Chymical affaires shall once agree
write clearly and plainly of them, an
thereby keep men from being stunn'
as it were, or impos'd upon by dark
empty Words; 'tis to be hop'd th
the

ese men finding that they can no long-
r write impertinently and absurdly,
ithout being laugh'd at for doing so,
ill be reduc'd either to write nothing,
r Books that may teach us something,
id not rob men, as formerly, of inva-
uable Time; and so ceasing to trouble
e World with Riddles or Impertinen-
es, we shall either by their Books re-
eive an Advantage, or by their silence
cape an Inconvenience.

But after all this is said (Continues
Eleutherius) it may be represented in fa-
our of the Chymists, that, in one regard
e Liberty they take in using names,
it be excusable at any time, may be
ore so when they speak of the substan-
es whereinto their *Analysis* resolves
ixt Bodies: Since as Parents have the
ight to name their own Children, it has
ver been allow'd to the Authors of new
nventions, to Impose Names upon them.
nd therefore the subjects we speak of
eing so the Productions of the Chymists
rt, as not to be otherwise, but by it,
btainable; it seems but equitable to give
he Artists leave to name them as they
lease: considering also that none are so
it and likely to teach us what those Bo-

dies are, as they to whom we owe them.

I told You already (saies *Carneades*) that there is great Difference betwixt the being able to make Experiments, and the being able to give a Philosophical Account of them. And I will not now add, that many a Mine-digger may meet, whilst he follows his work, with a Gem or a Mineral which he knowes not what to make of, till he shewes it a Jeweller or a Mineralist to be inform'd what it is. But that which I would rather have You observ'd, is, That the Chymists I am now in debate with have given up the Liberty You challeng'd for them of using Names at Pleasure, and confin'd themselves by their Descriptions, though but such as they are, of their Principles; so that although they might freely have call'd any thing their *Analysis* presents them with, either Sulphur, or Mercury, or Gas, or Blas, or what they pleas'd else, when they have told me that Sulphur (for instance) is a Primogeneal and simple Body, Inflamable, Odorous, &c. they must give me leave to disbelieve them, if they tell me that a Body that is either compounded or uninflamable is

such

ſch a Sulphur; and to think they play
th words, when they teach that Gold
d ſome other Minerals abound with
Incombuſtible Sulphur, which is as
oper an Expreſſion, as a Sun-ſhine
ight, or Fluid Ice.

But before I deſcend to the Mention
Particulars belonging to my Fourth
onſideration, I think it convenient to
emiſe a few Generals; ſome of which
hall the leſs need to inſiſt on at pre-
nt, becauſe I have Touched on them
ready.

And firſt *I* muſt invite you to take
tice of a certain
ſſage in *Helmont*;
ich though I have
t Found much hee-
d by his Readers,
e Himſelf *mentions*
a notable thing,
id I take to be a ve-
r conſiderable one;
r whereas the Di-
ll'd oyle of *oyle-*
ive, though drawn

Illud notabile, in vino eſſe Spiritum quendam mitiorem ulterioris & nobilioris qualitatis participem, quam qui immediatè per diſtillationem elicitur, dicitúrque aqua vitæ dephlegmata, quòd facilius in ſimplici Olivarum oleo ad oculum ſpectatur. Quippe diſtillatum oleum abſque laterum aut tegularum additamento, quodque oleum Philoſophorum dicitur, multum differt ab ejus oleitate, quæ elicitur prius reducto oleo ſimplici in partes diſſimulares ſola digeſtione & Salis circulati Paracelſici appoſitione; ſiquidem ſal circulatum idem in pondere & quantitatibus priſtinis ab oleo ſegregatur

*quam oleum olivarum in ſui heterogeneitates eſt diſpoſitum. Tulce
im tunc Oleum Olivarum ex oleo, prout & ſuaviſſimus vini ſpiritus à
no hoc pacto ſeparantur, longéq; ab aquæ vitæ acrimonia diſtinctus.*
Helmont. Aura vitalis, pag. 725.

per se is (as I have try'd) of a ve
sharp and fretting Quality, and of
odious taſt, He tells us that Simple oy
being only digeſted with *Paracelſus*'s
circulatum, is reduc'd into diſſimil
parts,& yeelds a ſweet Oyle, very diff
ing from the oyle diſtill'd, from ſal
oyle; as alſo that by the ſame way th
may be ſeparated from Wine a v
ſweet and gentle Spirit, partaking o
far other and nobler quality than t
which is immediately drawn by diſtil
tion and call'd *Dephlegm'd Aqua vi*
from whoſe Acrimony this other ſpiri is
exceedingly remote, although the
circulatum that makes theſe *Anatomies*
ſeparated from the Analyz'd Bodies,
the ſame weight and with the ſame q
lities it had before; which Affirmatio
Helmont if we admit to be true, we m
acknowledge that there may be a v
great diſparity betwixt bodies of
ſame denomination (as ſeveral oyles
ſeveral ſpirits) ſeparable from compo
Bodies: For, beſides the differences I ſhall
anon take notice of, betwixt thoſe
ſtill'd Oyles that are commonly kno
to Chymiſts, it appears by this, that
means of the *Sal Circulatum*, There

be quite another sort of Oyles obtain'd from the same Body; and who knowes but that there may be yet other Agents found in Nature, by whose help there may, whether by Transmutation or otherwise, be obtain'd from the Bodies vulgarly call'd Mixt, Oyles or other substances, Differing from those of the same Denomination, known either to Vulgar Chymists, or even to *Helmont* himself: but for fear You should tell me, that this is but a conjecture grounded upon another Man's Relation, whose Truth we have not the means to Experiment, I will not Insist upon it; but leaving You to Consider of it at leasure, I shall proceed to what is next.

Secondly, then, If that be True which was the Opinion of *Leucippus*, *Democritus*, and other prime *Anatomists* of old, and is in our dayes reviv'd by no mean Philosophers; namely, That our Culinary Fire, such as Chymists use, consists of swarmes of little Bodies swiftly moving, which by their smallness and motion are able to permeate the sollidest and Compactest Bodies, and even Glass it Self; If this (I say) be True, since we see that In flints and other Concretes,

the Fiery part is Incorporated with th
Groſſer, it will not be Irrational to co
jecture, that multitudes of theſe Fie
Corpuſcles, getting in at the Pores
the Glaſs, may aſſociate themſelv
with the parts of the mixt Body wher
on they work, and with them Conſ
tute new Kinds of Compound Bodie
according as the Shape, Size, and oth
Affections of the Parts of the Diſſip
ted Body happen to diſpoſe them,
Reference to ſuch Combinations;
which alſo there may be the great
Number; if it be likewiſe granted th
the Corpuſcles of the Fire, though
exceeding minute, and very ſwiftly m
ved, are not all of the ſame bigne,
nor Figure: And if I had not Weightie
Conſiderations to Diſcourſe to you
I could name to you, to Countenan
what I have newly ſaid, ſome partic
lar Experiments by which I have be
Deduc'd to think, that the Particles f
an open Fire working upon ſome B
dies may really Aſſociate themſelv
therewith, and add to the Quantit
But becauſe I am not ſure, that wh
the Fire works upon Bodies includ
in Glaſſes, it does it by a reall Tr
jectio

ction of the Fiery Corpuscles themlves, through the Substance of the lass, I will proceed to what is next to e mention'd.

I could (saies *Eleutherius*) help you o some Proofs, whereby I think it ay be made very probable, that when ne Fire acts immediately upon a Body, ome of its Corpuscles may stick to hose of the burnt Body, as they seem o do in Quicklime, but in greater numbers and more permanently. But or fear of retarding your Progress, I hall desire you to deferr this Enquiry till another time, and proceed as you intended

You may then in the next place (saies *Carneades*) observe with me, that not only there are some Bodies, as Gold, and Silver, which do not by the usual Examens, made by Fire, Discover themselves to be mixt; but if (as You may Remember I formerly told You) it be a De-compound Body that is Dissipable into several Substances, by being expos'd to the Fire it may be resolv'd into such as are neither Elementary, nor such as it was upon its last mixture Compounded of; but into new Kinds

Kinds of mixts. Of this I have alrea
given You ſome Examples in Sope, S
gar of Lead, and Vitriol. Now if w
ſhall Conſider that there are ſome B
dies, as well Natural, (as that I la
nam'd) as Factitious, manifeſtly D
compounded; That in the Bowells
the Earth Nature may, as we ſee ſ
ſometimes does, make ſtrange Mi
tures; That Animals are nouri'ſhd wi
other Animals and Plants; And, th
theſe themſelves have almoſt all of the
their Nutriment and Growth, eithe
from a certain Nitrous Juice Harbour'
in the Pores of the Earth, or from th
Excrements of Animalls, or from the pu
trify'd Bodies, either of living Crea
tures or Vegetables, or from other Sub
ſtances of a Compounded Nature; if,
ſay, we conſider this, it may ſeem pro
bable, that there may be among th
Works of Nature (not to mention thoſ
of Art) a greater number of De-com
pound Bodies, than men take Notic
of; And indeed, as I have formerly
alſo obſerv'd, it does not at all appear
that all Mixtures muſt be of Elemen
tary Bodies; but it ſeems farr more
probable, that there are divers ſorts of
com-

ompound Bodies, even in regard of l or ſome of their Ingredients, con-der'd Antecedently to their Mixture. or though ſome ſeem to be made up y the immediate Coalitions of the E-ements, or Principles themſelves, and herefore may be call'd *Prima Mixta*, or *Mixta Primaria*; yet it ſeems that many ther Bodies are mingl'd (if I may ſo peak) at the ſecond hand, their imme-liate Ingredients being not Elementary, ut theſe primary Mixt newly ſpoken of; And from divers of thoſe Secon-dary ſorts of Mixts may reſult, by a fur-ther Compoſition, a Third ſort, and ſo onwards. Nor is it improbable, that ſome Bodies are made up of Mixt Bo-dies, not all of the ſame Order, but of ſeveral; as (for Inſtance) a Concrete may conſiſt of Ingredients, whereof the one may have been a primary, the other a Secondary Mixt Body; (as I have in Native Cinnaber, by my way of Re-ſolving it, found both that Courſer part that ſeems more properly to be Oar, and a Combuſtible Sulphur, and a Running Mercury:) or perhaps without any Ingredient of this latter ſort, it may be compos'd of Mixt Bodies, ſome of them

them of the first, and some of the thir
Kind; And this may perhaps be some
what Illustrated by reflecting upo
what happens in some Chymical Pre
parations of those Medicines which the
call their *Bezoardicum*'s. For first, the
take Antimony and Iron, which ma
be look'd upon as *Prima Mista*; of thes
they compound a Starry *Regulus*, an
to this they add according to their In
tention, either Gold, or Silver, whic
makes with it a new and further Com
position. To this they add Sublimate
which is it self a De-compound body
(consisting of common Quicksilver, anc
divers Salts United by Sublimation in-
to a Chrystalline Substance) and from
this Sublimate, and the other Metal-
line Mixtures, they draw a Liquor, which
may be allow'd to be of a yet more
Compounded Nature. If it be true,
as Chymists affirm it, that by this
Art some of the Gold or Silver mingl'd
with the *Regulus* may be carry'd over
the Helme with it by the Sublimate; as
indeed a Skilfull and Candid person
complain'd to me a while since, That
an experienc'd Friend of His and mine,
having by such a way brought over a
great

reat Deal of Gold, in hope to do omething further with it, which might e gainful to him, has not only miss'd f his Aim, but is unable to recover is Volatiliz'd Gold out of the Antiionial butter, wherewith it is strictly nited.

Now (Continues *Carneades*) if a Compound body consist of Ingredients hat are not meerly Elementary; it is ot hard to conceive, that the Substanes into which the Fire Dissolves it, though seemingly Homogeneous enough, may be of a Compounded Nature, those parts of each body that are most of Kin associating themselves into a Compound of a new Kind. As when (for example sake) I have caus'd Vitriol and *Sal Armoniack*, and Salt Petre to be mingl'd and Distill'd together, the Liquor that came over manifested it self not to be either Spirit of Nitre, or of *Sal Armoniack*, or of Vitrioll. For none of these would dissolve crude gold, which yet my Liquor was able readily to do; and thereby manifested it self to be a new Compound, consisting at least of Spirit of Nitre, and *Sal Armoniack*, (for the latter dissolv'd in the former, will

will Work on Gold) which nevertheleſs are not by any known way separable, and conſequently would not paſs for a Mixt Body, if we our ſelves did not, to obtain it, put and Diſtill together divers Concretes, whoſe Diſtinct Operations were known before hand. And, to add on this Occaſion the Experiment I lately promis'd You, because it is Applicable to our preſent purpoſe, I ſhall Acquaint You, that ſuſpecting the Common Oyle of Vitriol not to be altogether ſuch a ſimple Liquor as Chymiſts preſume it, I mingled it with an equal or a Double Quantity (for I try'd the Experiment more than once) of common Oyle of Turpentine ſuch as together with the other Liquors I bought at the Drugſters. And having carefully (for the Experiment is Nice, and ſomewhat dangerous) Diſtill'd the Mixture in a ſmall Glaſs Retort, I obtain'd according to my Deſire, (beſides the two Liquors I had put in) a pretty Quantity of a certaine ſubſtance, which ſticking all about the Neck of the Retort Diſcover'd it ſelf to be Sulphur, not only by a very ſtrong Sulphureous ſmell, and by the colour of

Brimſtone

rimstone; but also by this, That being put upon a coal, it was immediately kindl'd, and burn'd like common Sulhur. And of this Substance I have et by me some little Parcells, which ou may command and examine when ou please. So that from this Experiient I may deduce either one, or both f these Propositions, That a real Sulhur may be made by the Conjunction f two such Substances as Chymists take or Elementary, And which did not eiher of them apart appear to have any uch body in it; or that Oyle of Vitriol hough a Distill'd Liquor, and taken or part of the Saline Principle of the Concrete that yeelds it, may yet be so Compounded a body as to contain, beides its Saline part, a Sulphur like common Brimstone, which would hardly be it self a simple or un-compounded body.

I might (pursues *Carneades*) remind You, that I formerly represented it, as possible, That as there may be more Elements than five, or six; so the Elements of one body may be Different from those of another; whence it would follow, that from the Resolution of Decompound

compound Bodies, there may resu
Mixts of an altogether new kind,
the Coalition of Elements that never
perhaps conven'd before. I might, I sa
mind You of this, and add divers thin
to this second Consideration; but fo
fear of wanting time I willingly prete
mit them to pass on to the third, whi
is this, That the Fire does not alwai
barely resolve or take asunder, but m
also after a new manner mingle and co
pound together the parts (whether E
mentary or not) of the Body Dissipat
by it.

This is so evident, (saies *Carneades*) i
some obvious Examples, that I cannot b
wonder at their Supineness that ha
not taken notice of it. For when Wo
being burnt in a Chimney is dissipat
by the Fire into Smoake and Ashes, th
smoake composes soot, which is so f
from being any one of the princip
of the Wood, that (as I noted abov
you may by a further *Analysis* separa
five or six distinct substances from it. An
as for the remaining Ashes, the Chymi
themselves teach us, that by a furth
degree of fire they may be indissolub
united into glass. 'Tis true, that the
naly

alysis which the Chymists principally build upon is made, not in the open air, but in close Vessels; but however, the examples lately produc'd may invite you shrewdly to suspect, That heat may as well compound as dissipate the Parts of mixt Bodies: and not to tell you, that I have known a Vitrification made even in close vessels, I must remind you that the Flowers of Antimony, and those of Sulphur, are very mix'd Bodies, though they ascend in close vessels: And that it was in stopt glasses that I brought up the whole Body of Camphire. And whereas it may be objected, that all these examples are of Bodies forc'd up in a dry, not a Fluid forme, as are the Liquors wont to be obtain'd by distillation; I answer, That besides 'tis possible, that a Body may be chang'd from Consistent to Fluid, or from Fluid to Consistent, without being otherwise much altered, as may appear by the Easiness wherewith in Winter, without any Addition or Separation of Visible Ingredients, the same substance may be quickly harden'd into brittle Ice, and thaw'd again into Fluid Water; Besides this, I say it would be consider'd, that common

Quick-silver it self, which the Emine-
test Chymists confess to be a mixt Bo-
may be Driven over the Helme in s
Pristine forme of Quicksilver, and co-
sequently, in that of a Liquor. And c-
tainly 'tis possible that very compou-
ded Bodies may concurr to Constitu e
Liquors; Since, not to mention tha I
have found it possible, by the help c a
certain *Menstruum*, to distill Gold it s f
through a Retort, even with a Moder e
Fire: Let us but consider what happe s
in Butter of Antimony. For if that e
carefully rectify'd, it may be reduc'd
to a very clear Liquor; and yet if Y u
cast a quantity of fair water upon ,
there will quickly precipitate a Pon-
rous and Vomitive Calx, which made b-
fore a considerable part of the Liqu ,
and yet is indeed (though some emine t
Chymists would have it Mercurial) n
Antimonial Body carryed over and ke t
dissolv'd by the Salts of the Sublima ,
and consequently a compounded one: s
You may find, if You will have the C-
riosity to Examine this White powd r
by a skilful Reduction. And that Y u
may not think that Bodies as compou-
ded, as flowers of Brimstone, cannot b
brough t

brought to Concurr to Constitute Distill'd Liquors; And also That You may not imagine with Divers Learned Men that pretend no small skill in Chymistry, that at least no mixt Body can be brought over the Helme, but by corrosive Salts, I am ready to shew You, when You please, among other waies of bringing over Flowers of Brimstone (perhaps I might add even Mineral Sulphurs) some, wherein I employ none but Oleaginous bodies to make Volatile Liquors, in which not only the colour, but (which is a much surer mark) the smell and some Operations manifest that there is brought over a Sulphur that makes part of the Liquor.

One thing more there is, *Eleutherius*, (saies *Carneades*) which is so pertinent to my present purpose, that though I have touch'd upon it before, I cannot but on this occasion take notice of it. And it is this, That the Qualities or Accidents, upon whose account Chymists are wont to call a portion of Matter by the name of Mercury or some other of their Principles, are not such but that 'tis possible as Great (and therefore why not the like) may be produc'd by such changes

of Texture, and other Alterations, a
the Fire may make in the ſmall Parts o
a Body. I have already prov'd, when
diſcours'd of the ſecond General Conſi
deration, by what happens to plant
nouriſh'd only with fair water, an
Eggs hatch'd into Chickens, that b
changing the diſpoſition of the compo
nent parts of a Body, Nature is able t
effect as great Changes in a parcell o
Matter reputed ſimilar, as thoſe requiſit
to Denominate one of the *Tria Prim*
And though *Helmont* do ſomewher
wittily call the Fire the Deſtructor an
the Artificial Death of Things; And a
though another Eminent Chymiſt an
Phyſitian be pleas'd to build upon thi
That Fire can never generate any thin
but Fire; Yet You will, I doubt not, b
of another mind, If You conſider hov
many new ſorts of mixt Bodies Chymiſt
themſelves have produc'd by mean
of the Fire: and particularly, if You con
ſider how that Noble and Permanen
Body, Glaſs, is not only manifeſtly pro
duc'd by the violent action of the Fire
but has never, for ought we know, bee
produc'd any other way. And indeed i
ſeems but an inconſiderate Aſſertion o
ſom

ome *Helmontians*, that every ſort of Body of a Peculiar Denomination muſt e produc'd by ſome Seminal power; as think I could evince, if I thought it ſo eceſſary, as it is for me to haſten to vhat I have further to diſcourſe. Nor eed it much move us, that there are ome who look upon whatſoever the ire is employ'd to produce, not as up- n Natural but Artificial Bodies. For here is not alwaies ſuch a difference as nany imagine betwixt the one and the ther: Nor is it ſo eaſy as they think, clearly to aſſigne that which Properly, Conſtantly, and Sufficiently, Diſcrimi- nates them. But not to engage my ſelf n ſo nice a Diſquiſition, it may now ſuf- fice to obſerve, that a thing is common- y termed Artificial, when a parcel of matter is by the Artificers hand, or Tools, or both, brought to ſuch a ſhape or Form, as he Deſign'd before-hand in his Mind: Whereas in many of the Chymical Productions the effect would be produc'd whether the Artificer in- tended it or no; and is oftentimes very much other than he Intended or Look't for; and the Inſtruments employ'd, are not Tools Artificially faſhion'd and

ſhaped, like thoſe of Tradeſmen, f
this or that particular Work; but, f
the moſt part, Agents of Nature's ow
providing, and whoſe chief Powers
Operation they receive from their ow
Nature or Texture, not the Artifice
And indeed, the Fire is as well a Natu
Agent as Seed: And the Chymiſt th
imployes it, does but apply Natural
gents and Patients, who being th
brought together, and acting accordi
to their reſpective Natures, perfor
the work themſelves; as Apples, Plum
or other fruit, are natural Productio
though the Garden bring and faſten t
gether the Sciens & the Stock, and bo
Water, and do perhaps divers oth
waies Contribute to its bearing frui
But, to proceed to what I was going
ſay; You may obſerve with me, *Ele-*
therius, that, as I told You once befor
Qualities ſleight enough may ſerve
Denominate a Chymical Principle. Fo
when they anatomize a compound Boc
by the Fire, if they get a Subſtance i
flamable, and that will not mingle wi
Water, that they preſently call Sulphu
what is ſapid and Diſſoluble in Wate
that muſt paſſe for Salt; Whatſoever

fix'

xd and indissoluble in Water, that ey name Earth. And I was going to ld, that Whatsoever Volatile substance ey know not what to make of, not to y, whatsoever they please, that they ll Mercury. But that these Qualities ay either be produc'd, otherwise than such as they call Seminal Agents, or ay belong to bodies of a compounded ature, may be shewn, among other nstances, in Glass made of ashes, where ne exceeding strong-tasted *Alcalizate* alt joyning with the Earth becomes nsipid, and with it constitutes a Body; hich though also dry, fixt and indisso- uble in Water, is yet manifestly a mixt body; and made so by the Fire it self.

And I remember to our present pur- pose, that *Helmont*, amongst other Me- dicines that he commends, has a short process, wherein, though the Directions or Practice are but obscurely intima- ed; yet I have some reason not to Dis- believe the Process, without affirming or denying any thing about the vertues of he remedy to be made by it. *Quando* (saies he) *oleum cinnamomi &c. suo sali alcali miscetur absque omni aqua, trium menstruum artificiosa occultaque circulatione,* Helmont pag. 412.

totum in salem volatilem commutatum e
vere essentiam sui simplicis in nobis exp
mit & usque in prima nostri constituti
se se ingerit. A not unlike Process he de-
vers in another place; from whence, f
we suppose him to say true, I may argu,
that since by the Fire there may be pr-
duc'd a substance that is as well Saline
volatile as the Salt of Hartshorn, bloo
&c. which pass for Elementary; a
since that this Volatile Salt is rea
compounded of a Chymical Oyle and a
fixt Salt, the one made Volatile by t
other, and both associated by the fire
may well be suspected that other Sub-
stances, emerging upon the Dissipati
of Bodies by the Fire, may be new so
of Mixts, and consist of Substances
differing natures; and particularly I
have sometimes suspected, that since t
Volatile Salts of Blood, Harts-horn, &
are fugitive and endow'd with an exce-
ding strong smell, either that Chymi
do Erroneously ascribe all odours to s-
phurs, or that such Salts consist of sor
oyly parts well incorporated with t
Saline ones. And the like conjecture
have also made concerning Spirit of V-
negar, which, though the Chymists thin

ne of the Principles of that Body, and
ough being an Acid Spirit it seems to
e much less of kin than Volatile Salts
) sulphurs; yet, not to mention its pier-
ng smell; which I know not with what
ongruity the Chymist will deduce from
alt, I wonder they have not taken no-
ice of what their own *Tyrocinium Chymi-*
um teach us concerning the Distillation
f *Saccharum Saturni*; out of which *Begu-*
nus assures Us, that he distill'd, besides
i very fine spirit, no less than two Oyles,
:he one blood-red and ponderous, but
the other swimming upon the top of the
Spirit, and of a yellow colour; of which
he saies that he kept then some by him,
to verify what he dilivers. And though
I remember not that I have had two di-
stinct Oyles from Sugar of Lead, yet
that it will though distill'd without ad-
dition yeeld some Oyle, disagrees not
with my Experience. I know the Chy-
mists will be apt to pretend, that these
Oyles are but the volatiliz'd sulphur of
lead; and will perhaps argue it from
what *Beguinus* relates, that when the Di-
stillation is ended, you'l find a *Caput*
Mortuum extreamly black, and (as he
speaks) *nullius momenti*, as if the Body, or

Tyroc. Chym. L. 1. C. 4.

at

at leaſt the chief part of the Metal it ſe
were by the diſtillation carried over t
Helme. But ſince you know as well as
that *Saccharum Saturni* is a kind of M
giſtery, made only by calcining of Le
per ſe, diſſolving it in diſtill'd Vinega
and Chryſtalyzing the ſolution; if I h
leaſure to tell You how Differing a thi
I did upon examination find the *Cap*
Mortuum, ſo ſlighted by *Beguinus*, t
be from what he repreſents it, I beleev
you would think the conjecture pr
pos'd leſs probable than one or othe
of theſe three; either that this Oyle di
formerly concurr to conſtitute the Spir
of Vinegar, and ſo that what paſſes for
Chymical Principle may yet be furthe
reſoluble into diſtinct ſubſtances; or tha
ſome parts of the Spirit together wit
ſome parts of the Lead may conſtitute
Chymical Oyle, which therefore thoug
it paſs for Homogeneous, may be a ver
compounded Body: or at leaſt that b
the action of the Diſtill'd Vinegar an
the Saturnine Calx one upon another
part of the Liquor may be ſo alter'd a
to be tranſmuted from an Acid Spirit in-
to an Oyle. And though the truth of ei-
ther of the two former conjectures
would

y uld make the example I have refle-
ć d on more pertinent to my preſent
a gument; yet you'l eaſily diſcern, the
' iird and laſt Conjecture cannot be
i ſerviceable to confirm ſome other
ſſages of my diſcourſe.

To return then to what I was ſaying
ſt before I mention'd *Helmont*'s Expe-
ment, I ſhall ſubjoyne, That Chymiſts
uſt confeſs alſo that in the perfectly
ephlegm'd ſpirit of Wine, or other
ermented Liquors, that which they call
ıe Sulphur of the Concrete loſes, by
ıe Fermentation, the Property of Oyle,
which the Chymiſts likewiſe take to be
he true Sulphur of the Mixt) of being
nminglable with the Water. And if You
ill credit *Helmont*, a pound of the pu-
eſt Spirit of Wine may barely by the
ıelp of pure Salt of Tartar (which is but
he fixed Salt of Wine) be reſolv'd or
Tranſmuted into ſcarce half an ounce of
Salt, and as much Elementary Water as
ımounts to the remaining part of the
mention'd weight. And it may (as I think
I formerly alſo noted) be doubted, whe-
ther that Fixt & Alcalizate Salt, which
is ſo unanimouſly agreed on to be the
Saline Principle of incinerated Bodies,
be

Oſtendi aliàs, quomodo lib. una aquæ vitæ combibita in ſale Tartari ſiccato, vix fiat ſemuncia ſalis, cæterum totum corpus fiat aqua Elementalis. Helmont. in Aura vitali.

be not, as 'tis Alcalizate, a Product of the Fire? For though the taſt of Tartar, for Example, ſeem to argue that it contains a Salt before it be burn'd, that Salt being very Acid is of a quite Differing Taſt from the Lixiviate Salt of Calcin'd Tartar. And though it be not truly Objected againſt the Chymiſts, that they obtain all Salts they make by reducing the Body they work on into Aſhes with Violent Fires, (ſince Hartshorn, Amber, Blood, and divers other Mixts yeeld a copious Salt before they be burn'd to Aſhes) yet this Volatile Salt Differs much, as we ſhall by anon, from the Fixt Alcalizate Salt I ſpeak of; which for ought I remember is not producible by any known Way, without Incineration. 'Tis not unknown to Chymiſts, that Quickſilver may be Precipitated, without Addition, into a dry Powder, that remains ſo in Water. And ſome eminent *Spagyriſts*, and even *Raimund Lully* himſelf teach, that meerly by the Fire Quickſilver may in convenient Veſſels be reduc'd (at leaſt in great part) into a thin Liquor like Water, and mingla-ble with it. So that by the bare Actio-

he Fire, 'tis possible, that the parts
mixt Body should be so disposed
r new and differing manners, that
nay be sometimes of one consistence,
etimes of another; And may in
State be disposed to be mingled
h Water, and in another not. I
ld also shew you, that Bodies
m which apart Chymists cannot ob-
n any thing that is Combustible,
y by being associated together, and
the help of the Fire, afford an in-
mable Substance. And that on the
ner side, 'tis possible for a Body to
inflamable, from which it would ve-
much puzzle any ordinary Chymist,
d perhaps any other, to separate an
flamable Principle or Ingredient.
herefore, since the Principles of Chy-
ists may receive their Denominati-
s from Qualities, which it often ex-
eds not the power of Art, nor al-
aies that of the Fire to produce;
nd since such Qualities may be found
Bodies that differ so much in other
Qualities from one another, that they
eed not be allow'd to agree in that
ure and simple Nature, which Princi-
les, to be so indeed, must have; it may
justly

juſtly be ſuſpected, that many P-
ductions of the Fire that are ſhe d
us by Chymiſts, as the Principles of
the Concrete that afforded them, n y
be but a new kind of Mixts. And
annex, on this Occaſion, to theſe ar -
ments taken from the Nature of e
thing, one of thoſe which *Logicians* c l
ad Hominem, I ſhall deſire You to t e
Notice, that though *Paracelſus* Hi -
ſelf; and ſome that are ſo miſtaken s
to think he could not be ſo, have v -
tur'd to teach, that not only the b -
dies here below, but the Elemen s
themſelves, and all the other Parts f
the Univerſe, are compos'd of Sal,
Sulphur and Mercury; yet the learn d
Sennertus, and all the more wary Ch -
miſts, have rejected that conceit, and c
many of them confeſs, that the *Tria Pr -
ma* are each of them made up of th
four Elements; and others of the
make Earth and Water concurr wit
Salt, Sulphur and Mercury, to the Co -
ſtitution of Mixt bodies. So that on
ſort of theſe *Spagyriſts*, notwithſtandin
the ſpecious Titles they give to the pro
ductions of the Fire, do in effect gran
what I contend for. And, of the o
the

er sort I may well demand, to what ind of Bodies the Phlegm and dead arth, to be met with in Chymical Re- lutions, are to be referr'd? For either ey must say, with *Paracelsus*, but a- inst their own Concessions, as well as gainst Experience, that these are also ompos'd of the *Tria Prima*, whereof ney cannot separate any one from ei- ner of them; or else they must con- ess that two of the vastest Bodies here elow, Earth, and Water, are neither of nem compos'd of the *Tria Prima*; nd that consequently those three are ot the Universal, and Adequate In- redients, neither of all Sublunary Bo- ies, nor even of all mixt Bodies.

I know that the chief of these Chy- ists represent, that though the Distinct ubstances into which they divide mixt odies by the Fire, are not pure and Ho- nogeneous; yet since the four Elements nto which the *Aristotelians* pretend to esolve the like bodies by the same A- gent, are not simple neither, as them- elves acknowledge, 'tis as allowable for the Chymists to call the one Princi- ples, as for the Peripateticks to call the other Elements; since in both cases the Im-

Impoſition of the name is grounded o
ly upon the Predominancy of that El
ment whoſe name is aſcrib'd to it. N
ſhall I deny, that this Argument of t
Chymiſts is no ill one againſt the *Ariſt*
telians. But what Anſwer can it prove t
me, who you know am diſputing as we
againſt the *Ariſtotelian* Elements
as the Chymical Principles; and mu
not look upon any body as a true Pri
ciple or Element, but as yet compou
ded, which is not perfectly Homogen
ous, but is further Reſoluble into an
number of Diſtinct Subſtances ho
ſmall ſoever. And as for the Chymiſ
calling a body Salt, or Sulphur, or Me
cury, upon pretence that the Princip
of the ſame name is predominant in it
That it ſelf is an Acknowledgment c
what I contend for; namely that the
productions of the Fire, are yet com
pounded bodies. And yet whilſt this i
granted, it is affirm'd, but not prov'd
that the reputed Salt, or Sulphur, o
Mercury, conſiſts mainly of one bod
that deſerves the name of a princip
of the ſame Denomination. For hov
do Chymiſts make it appear that ther
are any ſuch primitive and ſimple bo
die

es in thoſe we are ſpeaking of; ſince s upon the matter confeſs'd by the an- er lately made, that theſe are not ſuch? nd if they pretend by Reaſon to evince hat they affirm, what becomes of eir confident boaſts, that the Chymiſt vhom they therefore, after *Beguinus*, ll a *Philoſophus* or *Opifex Senſatus*) can nvince our Eyes, by manifeſtly ewing in any mixt body thoſe ſimple bſtances he teaches them to be com- os'd of? And indeed, for the Chymiſts have recourſe in this caſe to other roofs than Experiments, as it is to wave e grand Argument that has all this hile been given out for a Demonſtra- ve One; ſo it releaſes me from the ob- gation to proſecute a Diſpute wherein am not engag'd to Examine any but xperimental proofs. I know it may lauſibly enough be Repreſented, in fa- our of the Chymiſts, that it being evi- ent that much the greater part of any hing they call Salt, or Sulphur, or Mer- ury, is really ſuch; it would be very ri- id to deny thoſe Subſtances the names ſcribed them, only becauſe of ſome light mixture of another Body; ſince not only the Peripateticks call particu-

lar parcels of matter Elementary though they acknowledge that El ments are not to be any where foun pure, at leaſt here below ; And ſince ſpecially there is a manifeſt Analogie Reſemblance betwixt the bodies obta nable by Chymical Anatomies and th principles whoſe names are given thei I have, I ſay, conſider'd that theſe thin may be repreſented ; But as for what drawn from the Cuſtome of the Perip teticks, I have already told You, th though it may be employ'd agair Them, Yet it is not available againſt m who allow nothing to be an Eleme that is not perfectly Homogeneous. Ar whereas it is alledg'd, that the Pred minant Principle ought to give a nam to the ſubſtance wherein it abounds ; anſwer, that that might much more rea ſonably be ſaid, if either we or the Chy miſts had ſeen Nature take pure Salt pure Sulphur, and pure Mercury, an compound of them every ſort of Mix Bodies. But, ſince 'tis to experience tha they appeal, we muſt not take it fo granted, that the Diſtill'd Oyle (for in ſtance) of a plant is mainly compos'd o the pure principle call'd Sulphur, ti

heyhave given us an ocular proof, that here is in that sort of Plants such an Homogeneous Sulphur. For as for the specious argument, which is drawn from the resemblance betwixt the Productions of the Fire, and the Respective, either *Aristotelian* Elements, or *Chymical* Principles, by whose names they are call'd; it will appear more plausible than coherent, if You will but recall to mind the state of the controversie; which is not, whether or no there be obtain'd from mixt Bodies certain substances that agree in outward appearance, or in some Qualities with Quicksilver or Brimstone, or some such obvious or copious Body; But whether or no all Bodies confess'd to be perfectly mixt were compos'd of, and are resoluble into a determinate number of primary unmixt Bodies. For, if you keep the state of the question in your Eye, you'l easily discerne that there is much of what should be Demonstrated, left unprov'd by those Chymical Experiments we are Examining. But (not to repeat what I have already discover'd more at large) I shall now take notice, that it will not presently follow, that because a Production of the Fire has some

affinity with some of the greater Masses of matter here below, that therefore they are both of the same Nature, and deserve the same Name; for the Chymists are not content, that flame should be look't upon as a parcel of the Element of Fire, though it be hot, dry, and active, because it wants some other Qualities belonging to the nature of Elementary fire. Nor will they let the Peripatetick call Ashes, or Quicklime, Earth, notwithstanding the many likenesses between them; because they are not tastless, as Elementary Earth ought to be: But if you should ask me, what then it is, that all the Chymical Anatomies of Bodies do prove, if they prove not that they consist of the three Principles into which the fire resolves them? I answer that their Dissections may be granted to prove, that some mixt bodies (for in many it will not hold) are by the fire, when they are included in close Vessels, (for that Condition also is often requisite) dissoluble into several Substances differing in some Qualities, but principally in Consistence. So that out of most of them may be obtain'd a fixt Substance partly saline, and partly insipid, an unctuous

nctuous Liquor, and another Liquor or ore that without being unctuous have manifeſt taſte. Now if Chymiſts will gree to call the dry and ſapid ſubſtance ılt, the Unctuous liquor Sulphur, and ıe other Mercury, I ſhall not much uarrel with them for ſo doing: But if ıey will tell me that Salt, Sulphur, and ſercury, are ſimple and primary bodies hereof each mixt body was actually ɔmpounded, and which was really in it ntecedently to the operation of the fire, ney muſt give me leave to doubt whe- ner (whatever their other arguments nay do) their Experiments prove all his. And if they will alſo tell me that he Subſtances their Anatomies are wont o afford them, are pure and ſimilar, as Principles ought to be, they muſt give ne leave to beleeve my own ſenſes; and heir own confeſſions, before their bare Aſſertions. And that you may not (*Eleutherius*) think I deal ſo rigidly with hem, becauſe I ſcruple to. Take theſe Productions of the Fire for ſuch as the Chymiſts would have them paſs for, upon the account of their having ſome affinity with them; conſider a little with me, that in regard an Element or Princi-

ple ought to be perfectly Similar ar
Homogeneous, there is no juſt cauſe wh
I ſhould rather give the body propos
the Name of this or that Element
Principle, becauſe it has a reſemblan
to it in ſome obvious Quality, rath
than deny it that name upon the a
count of divers other Qualities, where
the propos'd Bodies are unlike; and
you do but conſider what ſlight and e
ſily producible qualities they are th
ſuffice, as I have already more than on
obſerv'd, to Denominate a Chymic
Principle or an Element, you'l not,
hope, think my warineſs to be deſtitu
either of Example, or elſe of Reaſo
For we ſee that the Chymiſts will n
allow the *Ariſtotelians* that the Salt
Aſhes ought to be called Earth, thou
the Saline and Terreſtrial part ſymboli
in weight, in dryneſs, in fixneſs and fu
ſibility, only becauſe the one is ſap
and diſſoluble in Water, and the oth
not: Beſides, we ſee that ſapidneſs ar
volatility are wont to denominate th
Chymiſts Mercury or Spirit; and y
how many Bodies, think you, may agr
in thoſe Qualities which may yet be
very differing natures, and diſagree
quali

ualities either more numerous, or more onsiderable, or both. For not only Spi-: of Nitre, Aqua Fortis, Spirit of Salt, pirit of Oyle of Vitriol, Spirit of Al-me, Spirit of Vinegar, and all Saline iquors Distill'd from Animal Bodies, at all the Acetous Spirits of Woods eed from their Vinegar; All these, I y, and many others must belong to the hymists Mercury, though it appear ot why some of them should more be omprehended under one denominati-n than the Chymists Sulphur, or Oyle hould likewise be; for their Distill'd Oyles are also Fluid, Volatile, and Tasta-le, as well as their Mercury; Nor is it Necessary, that their Sulphur should be Unctuous or Dissoluble in Water, since they generally referr Spirit of Wine to Sulphurs, although that Spirit be not Unctuous, and will freely mingle with Water. So that bare Inflamability must constitute the Essence of the Chymists Sulphur; as uninflamableness joyned with any taste is enough to intitle a Distill'd Liquor to be their Mercury. Now since I can further observe to You, that Spirit of Nitre and Spirit of Hartshorne being pour'd together will boyle

and hiſſe and toſſe up one anoth
into the air, which the Chymiſ
make ſignes of great Antipathy in t
Natures of Bodies, (as indeed the
Spirits differ much both in Taſte, Sme
and Operations) Since I elſewhe
tell you of my having made two ſor
of Oyle out of the ſame mans bloo
that would not mingle with one an
ther; And ſince I might tell You Dive
Examples I have met with, of the Co
trariety of Bodies which according t
the Chymiſts muſt be huddl'd up tog
ther under one Denomination; I lea
you to Judge whether ſuch a multitud
of Subſtances as may agree in thei
ſlight Qualities, and yet Diſagree in C
thers more Conſiderable, are more wo
thy to be call'd by the Name of a Pri
ciple (which ought to be pure an
homogeneous) than to have appellat
ons given them that may make the
differ, in name too, from the bodie
from which they ſo wildly differ in Na
ture. And hence alſo, by the by, yo
may perceive that 'tis not unreaſonabl
to diſtruſt the Chymiſts way of Argu
mentation, when being unable to ſhew
us that ſuch a Liquor is (for Example
purely

purely saline, they prove, that at least it is much the predominant principle, because that the propos'd substance is strongly Tasted, and all Tast proceeds from salt; whereas those Spirits, such as spirit of Tartar, spirit of Harts-horn, and the like, which are reckoned to be the Mercuries of the Bodies that afford them, have manifestly a strong and piercing tast, and so has (according to what I formerly noted) the spirit of Box &c. even after the acid Liquor that concurr'd to compose it has been separated from it. And indeed, if sapidness belong not to the spirit or Mercurial Principle of Vegetables and Animals: I scarce know how it will be discriminated from their Phlegm, since by the absence of Inflamability it must be distinguish'd from their sulphur which affords me another Example, to prove how unacurate the Chymical Doctrine is in our present Case; since not only the spirits of Vegetables and Animals, but their Oyles are very strongly tasted, as he that shall but wet his tongue with Chymical Oyle of Cinnamon or of Cloves, or even of Turpentine, may quickly find, to his smart. And not only

I never try'd any Chymical Oyles who taſt was not very manifeſt and ſtrong but a skilful and inquiſitive perſon wh made it his buſineſs by elaborate op rations to depurate Chymical Oyles, & reduce them to an Elementary ſimplic ty, Informes us, that he never was ab to make them at all Taſtleſs; whence might inferr, that the proof Chymiſ confidently give us of a bodies being ſa line, is ſo far from demonſtrating th Predominancy, that it does not clearl Evince ſo much as the preſence of th ſaline Principle in it. But I will not (pu ſues *Carneades*) remind you, that th Volatile ſalt of Harts-horn, Amber Blood &c. are exceeding ſtrongly ſcen ted, notwithſtanding that moſt Chymiſt deduce Odours from Sulphur, and fron them argue the Predominancy of tha Principle in the Odorous body, becauſ I muſt not ſo much as add any new Ex amples of the incompetency of this for of Chymical arguments; ſince having al ready detain'd You but too long in thoſ generals that appertain to my fourth conſideration 'tis time that I proceed to the particulars themſelves, to which I thought fit they ſhould be previous:

Theſe

These Generals (continues *Carneades*) being thus premis'd, we might the better survey the Unlikeness that an attentive and unprepossess'd observer may take notice of in each sort of Bodies which the Chymists are wont to call the salts or humours or Mercuries of the Concretes that yeeld Them, as if they had all a simplicity, & Identity of Nature: whereas salts if they were all Elementary would as little differ as do the Drops of pure and simple Water. 'Tis known that both Chymists and Physitians ascribe to the fixt salts of calcin'd Bodies the vertues of their concretes; and consequently very differing Operations. So we find the *Alcali* of Wormwood much commended in distempers of the stomach; that of Eyebright for those that have a weak sight; and that of *Guajacum* (of which a great Quantity yeelds but a very little salt) is not only much commended in Venereal Diseases, but is believed to have a peculiar purgative vertue, which yet I have not had occasion to try. And though, I confess, I have long thought, that these *Alcalizate* salts are, for the most part, very neer of kin, and retain very little of the properties of

of the Concretes whence they were ſe-
parated; Yet being minded to Obſerve
watchfully whether I could meet with
any Exceptions to this General Obſer-
vation, I obſerv'd at the Glaſs-houſe,
that ſometimes the Metal (as the Wo-
men call it) or Maſs of colliquated In-
gredients, wch by Blowing they faſhion
into Veſſels of divers ſhapes, did ſome-
times prove of a very differing colour,
and a ſomewhat differing Texture, from
what was uſual. And having enquir'd
whether the cauſe of ſuch Accidents
might not be derived from the peculiar
Nature of the fixt ſalt employ'd to bring
the ſand to fuſion, I found that the
knowingſt Workmen imputed their
Miſ-adventures to the Aſhes, of ſome
certain kind of Wood, as having obſerv'd
the ignobler kind of Glaſs I lately men-
tion'd to be frequently produc'd, when
they had employ'd ſuch ſorts of Aſhes
which therefore they ſcruple to make
uſe of, if they took notice of them be-
forehand. I remember alſo, that an In-
duſtrious Man of my acquaintance hav-
ing bought a vaſt quantity of Tobacco
ſtalks to make a fixt Salt with, I had the
Curioſity to go ſee whether that Exotick
Plant,

pint, wch so much abounds in volatile sal, would afford a peculiar kind of *Alcali*; and I was pleas'd to find that in the *Lixivium* of it, it was not necessary, as is usual, to evaporate all the Liquor, that there might be obtain'd a Saline Calx, consisting like lime quench'd in the Air of a heap of little Corpuscles of unregarded shapes: but the fixt salt shot into figur'd Chrystal, almost as Nitre or *Salarmoniack* and other uncalcin'd salts are wont to do; And I further remember that I have observ'd that in the fixt salt of Urine, brought by depuration to be white, a taste not so unlike to that of common salt, and very differing from the wonted caustick Lixiviate taste of other salts made by Incineration. But because the Instances I have alledg'd of the Difference of *Alcalizate* salt are but few, and therefore I am still inclin'd to think, that most Chymists and many Physitians do, inconsiderately enough and without Warrant from Experience, ascribe the Vertues of the Concretes expos'd to Calcination, to the salts obtain'd by it; I shall rather to shew the Disparity of salts mention in the first Place the apparent Difference betwixt the

the Vegetable fixt salts and the Anim
Volatile ones: As (for Example)
twixt salt of Tartar, and salt of Hart
horn; whereof the former is so fixt th
'twill indure the brunt of a violent Fi
and stand in fusion like a Metal; whe
as the other (besides that it has a diff
ring tast and a very differing smell) is
far from being fixt, that it will fly awa
in a gentle heat as easily as spirit
Wine it self. And to this I shall add,
the next place, That even among th
Volatile salts themselves, there is a co
siderable Difference, as appears by th
distinct Properties of (for Instance) sa
of Amber, salt of Urine, salt of Mar
Skull, (so much extoll'd against the fa
ling Sickness) and divers others whic
cannot escape an ordinary Observe
And this Diversity of Volatile salts
have observ'd to be sometimes Discern
able even to the Eye, in their Figures
For the salt of Harts-horn I have ob
serv'd to adhere to the Receiver in th
forme almost of a *Parallelipipedon*; an
of the Volatile salt of humane bloo
(long digested before distillation, with
spirit of Wine) I can shew you store o
grains of that Figure which *Geometrici*
an

s call a *Rhombus*; though I dare not dertake that the Figures of theſe or her Saline Chryſtals (if I may ſo call nem) will be alwaies the ſame, what- er degree of Fire have been employ'd force them up, or how haſtily ſoever ey have been made to convene in the irits or liquors, in the lower part of hich I have uſually obſerv'd them af- r a while to ſhoot. And although, as I tely told You, I ſeldom found any ifference, as to Medical Vertues, in ne fixt Salts of Divers Vegetables; and ccordingly I have ſuſpected that moſt f theſe volatile Salts, having ſo great a Reſemblance in ſmell, in taſt, and fugi- iveneſs, differ but little, if at all, in heir Medicinal properties: As indeed have found them generally to agree in divers of them (as n their being ſome- what Diaphoretick and very Deopila- tive) Yet I remem- ber *Helmont* ſome- where informs us, that there is this Difference betwixt the ſaline ſpirit of Urine and that of Mans blood, that the former

Error vero per diſtillationem nobis monſtrat etiam Spiritum ſalinum plane volatilem odore nequicquam ut nec guſtu deſtinguibilem a Spiritu Vrinæ; In eo tamen eſſentialiter diverſum, quod ſpiritus talis cruoris curat Epilepſiam, non autem ſpiritus ſalis lotii.

Helmont. Aura Vitalis.

former will not cure the Epilepsy, b
the Latter will. Of the Efficacy also
the Salt of Common Amber against t
same Disease in Children, (for in Grow
Persons it is not a specifick) I may el
where have an Occasion to Entertai
You. And when I consider that to t
obtaining of these Volatile Salts (esp
cially that of Urine) there is not requ
site such a Destructive Violence of t
Fire, as there is to get those Salts th
must be made by Incineration, I am t
more invited to conclude, that th
may differ from one another and co
sequently recede from an Elementa
Simplicity. And, if I could here she
You what Mr. *Boyle* has Observ'
touching the Various Chymical D
stinctions of Salts; You would quick
discern, not only that Chymists do gi
themselves a strange Liberty to ca
Concretes Salts, that are according
their own Rules to be look'd upon
very Compounded Bodies; but that
mong those very Salts that seem El
mentary, because produc'd upon th
Anatomy of the Bodies that yeel
them, there is not only a visible Disp
rity, but, to speak in the common Lan
guage

gage, a manifest Antipathy or Contrariety: As is evident in the Ebullition and hissing that is wont to ensue, when the Acid Spirit of Vitriol, for Instance, is pour'd upon pot ashes, or Salt of Tartar. And I shall beg leave of this Gentleman, (saies *Carneades*) casting his Eyes on me, to let me observe to You out of some of his papers, particularly those wherein he treats of some Preparations of Urine, that not only one and the same body may have two Salts of a contrary Nature, as he exemplifies in the Spirit and *Alkali* of Nitre; but that from the same body there may without addition be obtain'd three differing and Visible Salts. For he Relates, that he observ'd in Urine, not only a Volatile and Chrystalline Salt, and a fixt Salt, but likewise a kind of *Sal Armoniack*, or such a Salt as would sublime in the form of a salt, and therefore was not fixt, and yet was far from being so fugitive as the Volatile salt; from which it seem'd also otherwise to differ. I have indeed suspected that this may be a *Sal Armoniack* properly enough so call'd, as Compounded of the Volatile salt of Urine, and the

fixt of the ſame Liquor, which, as I n
ted, is not unlike ſea-ſalt; but that
ſelf argues a manifeſt Difference b
twixt the ſalts, ſince ſuch a Volatile ſa
is not wont to Unite thus with an ord
nary *Alcali*, but to fly away from it
the Heat. And on this occaſion I r
member, that to give ſome of n
Friends an Ocular proof of the diff
rence betwixt the fixt and Volatile ſa
of (the ſame Concrete) Wood, I d
vis'd the following Experiment. I to
common Venetian ſublimate, and d
ſolv'd as much of it as I well could
fair Water: then I took Wood Aſhe
and pouring on them Warme Wate
Diſſolv'd their ſalt; and filtrating t
Water, as ſoon as I found the *Lix*
vium ſufficiently ſharp upon the tongu
I reſerv'd it for uſe: Then one part
the former ſolution of ſublimate dro
ping a little of this Diſſolv'd Fixt ſa
of Wood, the Liquors preſently turn
of an Orange Colour; but upon t
other part of the clear ſolution of ſub
limate putting ſome of the Volati
ſalt of Wood (which abounds in t
ſpirit of ſoot) the Liquor immediate
turn'd white, almoſt like Milke, and a
te

ter a while let fall a white sediment, as the other Liquor did a Yellow one.

To all this that I have said concerning the Difference of salts, I might add what I formerly told you, concerning the simple spirit of Box, and such like Woods, which differ much from the other salts hitherto mention'd, and yet would belong to the saline Principle, if Chymists did truly teach that all Tasts proceed from it. And I might also annex, what I noted to you out of *Helmont* concerning Bodies, which, though they consist in great part of Chymical Oyles, do yet appear but Volatile salts; But to insist on these things, were to repeat; and therefore I shall proceed.

Aliquando oleum Cinnamomi, &c. suo sali Alcali miscetur absque omni aqua, trium mensium Artificiosa occultaque circulatione, totum in salem volatilem commutatum est. Helmont. Tria Prima Chymicorum, &c. pag. 412.

This Disparity is also highly eminent in the separated sulphurs or Chymical Oyles of things. For they contain so much of the scent, and tast, and vertues, of the Bodies whence they were drawn, that they seem to be but the Material *Crasis* (if *I* may so speak) of their Concretes. Thus the Oyles of Cinna-

mon, Cloves, Nutmegs and other ſpi-
ces, ſeem to be but the United Aroma-
tick parts that did ennoble thoſe Bo-
dies. And 'tis a known thing, that Oy
of Cinnamon, and Oyle of Cloves
(which I have likewiſe obſerv'd in th
Oyles of ſeveral Woods) will ſink t
the Bottom of Water: whereas thoſ
of Nutmegs and divers other Vege
tables will ſwim upon it. The Oyl
(abuſively call'd ſpirit) of Roſes ſwim
at the Top of the Water in the form
of a white butter, which I remembe
not to have obſerv'd in any other Oyl
drawn in any Limbeck; yet there is
way (not here to be declar'd) b
which I have ſeen it come over in th
forme of other Aromatick Oyles, to th
Delight and Wonder of thoſe that be
held it. In Oyle of Aniſeſeeds, whic
I drew both with, and without Fe
mentation, I obſerv'd the whole Bod
of the Oyle in a cool place to thicke
into the Conſiſtence and Appearanc
of white Butter, which with the lea
heat reſum'd its Former Liquidneſs. I
the Oyle of Olive drawn over in a R
tort, I have likewiſe more than onc
ſeen a ſpontaneous Coagulation in th
Receive

Receiver: And I have of it by me thus Congeal'd; which is of such a strangely Penetrating scent, as if 'twould Perforate the Noses that approach it. The like pungent Odour I also observ'd in the Distill'd Liquor of common sope, which forc'd over from *Minium*, lately afforded an oyle of a most admirable Penetrancy; And he must be a great stranger, both to the Writings and preparations of Chymists, that sees not in the Oyles they distill from Vegetables and Animals, a considerable and obvious Difference. Nay I shall venture to add, *Eleutherius* (what perhaps you will think of kin to a Paradox) that divers times out of the same Animal or Vegetable, there may be extracted Oyles of Natures obviously differing. To which purpose I shall not insist on the swimming and sinking Oyles, which I have sometimes observ'd to float on, and subside under the spirit of *Guajacum*, and that of divers other Vegetables Distill'd with a strong and lasting Fire; Nor shall I insist on the observation elsewhere mention'd, of the divers and unmingleable oyles afforded us by Humane Blood long fermented and

Digeſted with ſpirit of Wine, becauſe theſe kind of oyles may ſeem chiefly to differ in Conſiſtence and Weight being all of them high colour'd and a duſt. But the Experiment, which I devis'd to make out this Difference of the oyles of the ſame Vegetable, *ad Oculum*, (as they ſpeak) was this that followes. I took a pound of Aniſe ſeeds, and having groſly beaten them cauſed them to be put into a very large glaſs Retort almoſt filled with fair Water; and placing this Retort in a ſand Furnace, I caus'd a very Gentle heat to be adminiſtred during the firſt day, and a great part of the ſecond till the Water was for the moſt part drawn off, and had brought over with it at leaſt moſt of the Volatile and Aromatick Oyle of the ſeeds. And then encreaſing the Fire, and changing the Receiver, I obtain'd beſides an Empyreumatical Spirit, a quantity of adult oyle; whereof a little floated upon the Spirit, and the reſt was more heavy, and not eaſily ſeparable from it. And whereas theſe oyles were very dark and ſmell'd (as Chymiſts ſpeak) ſo ſtrongly of the Fire, that their Odour

dic

d not betray from what Vegetables ey had been forc'd; the other *Aroma-k* Oyle was enrich'd with the genuine ell and taſt of the Concrete; & ſpon-neouſly coagulating it ſelf into white itter did manifeſt it ſelf to be the true yle of Aniſeſeeds; which Concrete I erefore choſe to employ about this xperiment, that the Difference of theſe yles might be more conſpicuous than would have been, had I inſtead of it ſtill'd another Vegetable.

had almoſt forgot to take notice, that ere is another ſort of Bodies, which ough not obtain'd from Concretes by iſtillation, many Chymiſts are wont call their Sulphur; not only becauſe ch ſubſtances are, for the moſt part, igh colour'd, (whence they are alſo, nd that more properly, called Tinctures) as diſſolv'd Sulphurs are wont to e; but eſpecially becauſe they are, for he moſt part, abſtracted and ſeparated rom the reſt of the Maſs by Spirit of Vine: which Liquor thoſe men ſuppoſing o be Sulphureous, they conclude, that vhat it works upon, and abſtracts, muſt e a Sulphur alſo. And upon this account hey preſume, that they can ſequeſter

the ſulphur even of Minerals and Me
talls; from wch 'tis known that they can
not by fire alone ſeparate it. To all Th
I ſhall anſwer; That if theſe ſequeſtre
ſubſtances were indeed the ſulphurs
the Bodies whence they are drawn, the
would as well be a great Diſparity b
twixt Chymical Sulphurs obtain'd b
Spirit of Wine, as I have already ſhew
there is betwixt thoſe obtain'd by Diſti
lation in the forme of Oyles: which w
be evident from hence, that not to ur
that themſelves aſcribe diſtinct vertu
to Mineral Tincture, extolling the Ti
cture of Gold againſt ſuch and ſuch Di
eaſes; the Tincture of Antimony, or
its Glaſs, againſt others; and the Ti
cture of Emerald againſt others; 'i
plain, that in Tinctures drawn from V
getables, if the ſuperfluous ſpirit
Wine be diſtill'd off, it leaves at th
bottom that thicker ſubſtance whi
Chymiſts uſe to call the Extract of th
Vegetable. And that theſe Extracts a
endow'd with very differing Qualities a
cording to the Nature of the Particul
Bodies that afforded them (though I fe
ſeldom with ſo much of the ſpecifick ve
tues as is wont to be imagin'd) is free
co

nfefs'd both by Phyſitians and Chy-
iſts. But *Eleutherius* (ſaies *Carneades*)
e may here take Notice that the Chy-
iſts do as well in this caſe, as in many
thers allow themſelves a Licenſe to a-
uſe Words: For not again to argue
om the differing properties of Tin-
tures, that they are not exactly pure
nd Elementary Sulphurs; they would
aſily appear not to be ſo much as Sul-
hur's, although we ſhould allow Chy-
nical Oyles to deſerve that Name. For
owever in ſome Mineral Tinctures the
Natural fixtneſs of the extracted Body
loes not alwaies ſuffer it to be eaſily
further reſoluble into differing ſubſtan-
ces; Yet in very many extracts drawn
from Vegetables, it may very eaſily be
manifeſted that the ſpirit of Wine has
not ſequeſtred the ſulphureous Ingredi-
ent from the ſaline and Mercurial ones;
but has diſſolv'd (for I take it to be a
Solution) the finer Parts of the Con-
crete (without making any nice diſtin-
ction of their being perfectly Sulphure-
ous or not) and united it ſelf with them
into a kind of Magiſtery which conſe-
quently muſt contain Ingredients or
Parts of ſeveral ſorts. For we ſee that the

ſtones

ſtones that are rich in vitriol, being often drench'd with rain-Water, the Liquor will then extract a fine and tranſparent ſubſtance coagulable into Vitriol; and yet though this Vitriol be readily diſſoluble in Water, it is not a true Elementary Salt, but, as You know, a body reſoluble into very differing Parts whereof one (as I ſhall have occaſion to tell You anon) is yet of a Metalline, and conſequently not of an Elementary Nature. You may conſider alſo, that common Sulphur is readily diſſoluble in Oyle of Turpentine, though notwithſtanding its Name it abounds as well, if not as much, in Salt as in true Sulphur; witneſs the great quantity of ſaline Liquor it affords being ſet to flame away under a glaſs Bell. Nay I have, which perhaps You will think ſtrange, with the ſame Oyle of Turpentine alone eaſily enough diſſolv'd crude Antimony finely powder'd into a Blood-red Balſam, wherewith perhaps conſiderable things may be perform'd in Surgery. And if it were now Requiſite, I could tell You of ſome other Bodies, (ſuch as Perhaps You would not ſuſpect) that I have been able to work upon with certain Chymical Oyles.

But

B: instead of digressing further I shall
ke this use of the Example I have
n'd. That 'tis not unlikely, but that
Sirit of Wine which by its pungent
t, and by some other Qualities that
ue it better, (especially its Reduci-
eness, according to *Helmont*, into *Al-
i*, and Water,) seems to be as well of a
line as of a Sulphureous Nature, may
ll be suppos'd Capable of Dissolving
bstances, That are not meerly Ele-
entary suphurs, though perhaps they
ay abound with Parts that are of kin
ereunto. For I find that Spirit of Wine
ill dissolve *Gumm Lacca*, *Benzoine*, and
e *Resinous* Parts of *Jallap*, and even of
uajacum; whence we may well suspect
at it may from Spices, Herbs, and o-
er less compacted Vegetables, extract
bstances that are not perfect Sulphurs
ut mixt Bodies. And to put it past Dis-
ute, there is many a Vulgar Extract
rawn with Spirit of Wine, which com-
nitted to Distillation will afford such
iffering substances as will Loudly pro-
laim it to have been a very compounded
Body. So that we may justly suspect, that
even in Mineral Tinctures it will not al-
waies follow, that because a red sub-
stance

ſtance is drawn from the Concrete
ſpirit of Wine, that Subſtance is its tr
and Elementary Sulphur. And thou
ſome of theſe Extracts may perhaps
inflamable; Yet, beſides that others a
nor, and beſides that their being reduc
to ſuch Minuteneſs of Parts may mu
facilitate their taking Fire; beſides th
I ſay, We ſee that common Sulphu
common Oyle, Gumm Lac, and m
ny Unctuous and Reſinous Bodies, w
flame well enough, though they be
very compounded Natures: Nay Tr
vellers of Unſuſpected Credit aſſu
Us, as a known thing, that in ſome No
thern Countries where Firr trees ar
Pines abound, the poorer ſort of Inh
bitants uſe Long ſplinters of thoſe R
ſinous Woods to burn inſtead of Ca
dles. And as for the redneſs wont to b
met with in ſuch ſolutions, I could eaſi
ſhew, that 'tis not neceſſary it ſhoul
proceed from the Sulphur of the Co
crete, Diſſolv'd by the Spirit of Win
if I had leaſure to manifeſt how muc
Chymiſts are wont to delude themſelv
and others, by the Ignorance of thoſe
ther cauſes, upon whoſe account ſpirit
Wine and other *Menſtruums* may acqui

a ed or ſome other high colour. But t returne to our Chymical Oyles, ſup- ſing that they were exactly pure;) t I hope they would be, as the beſt ſ rit of Wine is, but the more infla- ible and deflagrable. And therefore ſ ce an Oyle can be by the Fire alone i mediately turn'd into flame, which is ſ mething of a very differing Nature ſ om it: I ſhall Demand how this yle can be a Primogeneal and Incor- ptible Body, as moſt Chymiſts would ive their Principles; Since it is further ſoluble into flame, which whether or o it be a portion of the Element of ire, as an *Ariſtotelian* would conclude, s certainly ſomething of a very differ- ng Nature from a Chymical Oyle, ſince t burnes, and ſhines, and mounts ſwiftly pwards; none of which a Chymical Oyle does, whilſt it continues ſuch. And if it ſhould be Objected, that the Diſſipated Parts of this flaming Oyle may be caught and collected again into Oyl or Sulphur; I ſhall demand, what Chymiſt appears to have ever done it; and without Examining whether it may not hence be as well ſaid that ſulphur is but compacted Fire, as that Fire is but diffus'd

diffus'd Sulphur, I ſhall leave you
conſider whether it may not hence
argu'd, that neither Fire nor Sulph
are primitive and indeſtructible Bodi
and I ſhall further obſerve that at le
it will hence appear, that a portion
matter may, without being Compou-
ded with new Ingredients, by havi
the Texture and Motion of its ſm
parts chang'd, be eaſily, by the mea
of the Fire, endow'd with new Qua-
ties, more differing from them it h
before, than are thoſe which ſuffice
diſcriminate the Chymiſts Princip
from one another.

We are next to Conſider, wheth
in the Anatomy of mixt Bodies, th
which Chymiſts call the Mercurial pa
of them be un-compounded, or no. B
to tell You True, though Chymiſts d
Unanimouſly affirm that their Reſolut
ons diſcover a Principle, which the
call Mercury, yet I find them to give
it Deſcriptions ſo Differing, and
Ænigmatical, that I, who am not a
ſham'd to confeſs that I cannot under
ſtand what is not ſence, muſt acknow
ledge to you that I know not what t
make of them. *Paracelſus* himſelf, an
there

herefore, as you will easily beleeve, many of his Followers, does somewhere call that Mercury which ascends upon the burning of Wood, as the Peripatecks are wont to take the same smoake for Air; and so seems to define Mercury by Volatility, or (if I may coyne such a Word) Effumability. But since, in this Example, both Volatile Salt and Sulphur make part of the smoake, which does indeed consist also both of Phlegmatick and Terrene Corpuscles, this Notion is not to be admitted; And I find that the more sober Chymists themselves disavow it. Yet to shew you how little of clearness we are to expect in the accounts even of later *Spagyrists*, be pleas'd to take notice, that *Beguinus*, even in his *Tyrocinium Chymicum*, written for the Instruction of Novices, when he comes to tell us what are meant by the *Tria Prima*, which for their being Principles ought to be defin'd the more accurately and plainly, gives us this Description of Mercury; *Mercurius* (saies he) *est liquor ille acidus, permeabilis, penetrabilis, æthereus, ac purissimus, à quo omnis Nutricatio, Sensus, Motus, Vires, Colores, Senectutisque Præproperæ retardatio.*

Chym. Tyrocin. lib. 1. Cap. 2.

datio. Which words are not so much a Definition of it, as an *Encomium*: and yet *Quercetanus* in his Description of the same Principle adds to these, divers other *Epithets*. But both of them to skip very many other faults that may be found with their Metaphorical Descriptions, speak incongruously to the Chymists own Principles. For if Mercury be an Acid Liquor, either Hermetical Philosophy must err in ascribing all Tasts to Salt, or else Mercury must not be a Principle, but Compounded of a Saline Ingredient and somewhat else. *Libavius*, though he find great fault with the obscurity of what the Chymists write concerning their Mercurial Principle, does yet but give us such a Negative Description of it, as *Sennertus*, how favourable soever to the *Tria Prima*, is not satisfi'd with. And this *Sennertus* Himself, though the Learned'st Champion for the Hypostatical Principles, does almost as frequently as justly complain of the unsatisfactoriness of what the Chymists teach concerning their Mercury; and yet he himself (but with his wonted modesty) Substitutes instead of the Description

f *Libavius*, another, which many Rea-
ers, especially if they be not Peripa-
ticks, will not know what to make of.
or scarce telling us any more, than
at in all bodies that which is found
esides Salt and Sulphur, and the E-
ments, or, as they call them, Phlegm
d Dead Earth, is that Spirit which
Aristotles Language may be call'd
α ἀνάλογα τῶν ἄτομων στοιχείων. He saies that
hich I confess is not at all satisfacto-
y to me, who do not love to seem to
equiesce in any mans Mystical Do-
rines, that I may be thought to under-
and them.

If (saies *Eleutherius*) I durst pre-
ume that the same thing would be
nought clear by me, and those that are
ond of such cloudy Expressions as You
istly Tax the Chymists for, I should ven-
ure to offer to Consideration, whether
r no, since the Mercurial Principle that
rises from Distillation is unanimously
sserted to be distinct from the salt and
ulphur of the same Concrete, that may
ot be call'd the Mercury of a Body,
vhich though it ascend in Distillation,
s do the Phlegme and Sulphur, is nei-
ther insipid like the former, nor infla-

mable like the latter. And therefore would ſubſtitute to the too much abu ſed Name of Mercury, the more cle and Familiar Appellation of Spiri which is alſo now very much made u of even by the Chymiſts themſelv of our times, though they have n given us ſo Diſtinct an Explication, were fit, of what may be call'd the Sp rit of a mixt Body.

I ſhould not perhaps (ſaies *Carne des*) much quarrel with your Notio of Mercury. But as for the Chymiſt, what they can mean, with congruity their own Principles, by the Merc ry of Animals and Vegetables, 'tw not be ſo eaſie to find out; for they a cribe Taſts only to the Saline Principl and conſequently would be much put it to ſhew what Liquor it is, in the R ſolution of bodies, that not being i ſipid, for that they call Phlegme, ne ther is inflamable as Oyle or Sulphu nor has any Taſt; which according t them muſt proceed from a Mixture, leaſt, of Salt. And if we ſhould tak Spirit in the ſence of the Word re ceiv'd among Modern Chymiſts an Phyſitians, for any Diſtill'd Liquor tha

s neither Phlegme nor oyle; the Ap-
ellation would yet appear Ambigu-
us enough. For plainly, that which first
scends in the Distillation of Wine
nd Fermented Liquors, is generally as
vell by Chymists as others reputed a
pirit. And yet pure Spirit of Wine
eing wholly inflamable ought accor-
ling to them to be reckon'd to the Sul-
hureous, not the Mercurial Principle.
And among the other Liquors that go
nder the name of Spirits, there are
livers which seem to belong to the fa-
nily of Salts, such as are the Spirits of
Nitre, Vitriol, Sea-Salt and others, and
even the Spirit of Harts-horn, being, as
I have try'd, in great part, if not totally
reducible into Salt and Phlegme, may
be suspected to be but a Volatile Salt
disguis'd by the Phlegme mingl'd with
it into the forme of a Liquor. How-
ever if this be a Spirit, it manifestly dif-
fers very much from that of Vinegar,
the Taste of the one being Acid, and the
other Salt, and their Mixture in case they
be very pure, sometimes occasioning an
Effervescence like that of those Li-
quors the Chymists count most contra-
ry to one another. And even among

thoſe Liquors that ſeem to have a be
ter title, than thoſe hitherto mention'
to the name of Spirits, there appears
ſenſible Diverſity; For ſpirit of Oak, fo
inſtance, differs from that of Tartar, an
this from that of Box, or of *Guajacu*
And in ſhort, even theſe ſpirits as we
as other Diſtill'd Liquors manifeſt
great Diſparity betwixt themſelve
either in their Actions on our ſenſes,
in their other operations.

And (continues *Carneades*) beſid
this Diſparity that is to be met with
mong thoſe Liquors that the Moder
call ſpirits, and take for ſimilar bodie
what I have formerly told you concer
ing the Spirit of Box-wood may let yo
ſee that ſome of thoſe Liquors not onl
have qualities very differing from
thers, but may be further reſolved in
ſubſtances differing from one another.

And ſince many moderne Chymiſ
and other Naturaliſts are pleaſed t
take the Mercurial ſpirit of Bodies fo
the ſame Principle, under differin
names, I muſt invite you to obſerve, wit
me, the great difference that is conſpi
cuous betwixt all the Vegetable an
Animal ſpirits I have mention'd an
runnin

lercury. I ſpeak not of that which is ommonly ſold in ſhops that many of iemſelves will confeſſe to be a mixt ody; but of that which is ſeparated om Metals, which by ſome Chymiſts at ſeem more Philoſophers than the ſt, and eſpecially by the above menti- ied *Claveus*, is (for diſtinction ſake) cal- d *Mercurius Corporum*. Now this Me- lline Liquor being one of thoſe three rinciples of which Mineral Bodies are / *Spagyriſts* affirmed to be compos'd id to be reſoluble into them, the many otorious Differences betwixt them and ie Mercuries, as They call Them, of egetables and Animals will allow me) inferr, either that Minerals and the ther two ſorts of Mixt Bodies conſiſt ot of the ſame Elements, or that thoſe rinciples whereinto Minerals are im- iediately reſolved, which Chymiſts ith great oſtentation ſhew us as the ue principles of them, are but Se- undary Principles, or Mixts of a pecu- ar ſort, which muſt be themſelves re- uc'd to a very differing forme, to be of ie ſame kind with Vegetable and Ani- al Liquors.

But this is not all; for although I for-

merly told You how Little Credit thet is to be given to the Chymical Proceſſe commonly to be met with, of Extractin the Mercuries of Metals, Yet I will no add, that ſuppoſing that the more Ju dicious of Them do not untruly affirn that they have really drawn true ar running Mercury from ſeveral Meta (which I wiſh they had clearly taug Us how to do alſo,) yet it may be ſt doubted whether ſuch extracted Merc ries do not as well differ from co mon Quickſilver, and from one anoth as from the Mercuries of Vegetabl and Animals. *Claveus*, in his Apolog, ſpeaking of ſom *experiments* whe by Metalline M curies may be fit into the nobler m tals, adds, that e ſpake of the Mercuries drawn fro metals; becauſe common Quickſilver y reaſon of its exceſſive coldneſs and mo ſture is unfit for that particular kind of operation; for which though a few lin s before he preſcribes in general the M curies of Metalline Bodies, yet he chie y commends that drawn by art from ſilv

Dixi autem de argento vivo à metallis prolicito, quod vulgare ob niniam frigiditatem & humiditatem nimium concoctioni eſt contumax, nec ab auro ſolum alteratio coerceri poteſt. Gaſt. Clave. in Apol.

A

nd elſewhere, in the ſame Book, he lls us, that he himſelf tryed, that by ire coction the quickſilver of Tin or ewter (*argentum vivum ex ſtanno proli-tum*) may by an efficient cauſe, (as he eaks) be turn'd into pure Gold. And e Experienc'd *Alexander van Suchten*, mewhere tells us, that by a way he in-mates may be made a Mercury of Cop-er, not of the Silver colour of other ſercuries, but green; to which I ſhall ld, that an eminent perſon, whoſe name is travells and learned writings have nade famous, lately aſſur'd me that he ad more than once ſeen the Mercury f Lead (which what ever Authors pro-niſe, you will find it very difficult to nake, at leaſt in any conſiderable quan-ity) fixt into perfect Gold. And being y me demanded whether or no any ther Mercury would not as well have been changed by the ſame Operations, ie aſſured me of the Negative.

And ſince I am fallen upon the men-ion of the Mercuries of metals, you will perhaps expect, (*Eleutherius*) that I ſhould ſay ſomething of their two other principles; but I muſt freely confeſs to you, that what Diſparity there may be

between the ſalts and ſulphurs of Me
tals or other Minerals, I am not m
ſelf experienced enough in the ſepara
tions and examens of them, to ven
ture to determine: (for as for the ſal
of Metals, I formerly repreſented it
a thing much to be queſtion'd, whethe
they have any at all.) And for the pro
ceſſes of ſeparation I find in Authors,
they were (what many of them are no
ſucceſsfully practicable, as I noted
bove, yet they are to be performed b
the aſſiſtance of other bodies, ſo hardl
if upon any termes at all, ſeparable fro
them, that it is very difficult to give th
ſeparated principles all their due, and n
more. But the Sulphur of Antimon
which is vehemently vomitive, and th
ſtrongly ſcented Anodyne Sulphur o
Vitriol inclines me to think that not on
ly Mineral Sulphurs differ from Veget
ble ones, but alſo from one another, re
taining much of the nature of the
Concretes. The ſalts of metals, and o
ſome ſort of minerals, You will eaſil
gueſſe (by the doubts I formerly ex
preſs'd, whether metals have any ſalt a
all) that I have not been ſo happy as yo
too ſee, perhaps not for want of curioſ
t

1. But if *Paracelsus* did alwaies write so
nsentaneously to himself that his opi-
on were confidently to be collected
om every place of his writings where
seems to expresse it, I might safely
ke upon me to tell you, that he both
untenances in general what I have de-
vered in my Fourth main consideration,
id in particular warrants me to suspect
iat there may be a difference in metal-
ne and mineral Salts, as well as we find
in those of other bodies. For, *Sulphur*
saies he) *aliud in auro, aliud in argento,* Paracel. de Mineral. Tract. 1. pag. 141.
liud in ferro, aliud in plumbo, stanno, &c.
ic aliud in Saphyro, aliud in Smaragdo,
liud in rubino, chrysolitho, amethysto,
nagnete, &c. Item aliud in lapidibus, silice,
alibus, fontibus, &c. nec vero tot sulphura
tantum, sed & totidem salia; sal aliud in
metallis, aliud in gemmis, aliud in lapidibus,
aliud in salibus, aliud in vitriolo, aliud in
alumine: similis etiam Mercurii est ratio.
Alius in Metallis, alius in Gemmis, &c. Ita
ut unicuique speciei suus peculiaris Mer-
curius sit. Et tamen res saltem tres sunt;
una essentia est sulphur; una est sal; una est
Mercurius. Addo quod & specialius adhuc
singula dividantur; aurum enim non u-
num, sed multiplex, ut & non unum pyrum,
pomum,

pomum, ſed idem multiplex, totidem etia
ſulphura auri, ſalia auri, mercurii aur
idem competit etiam metallis & gemmis;
quot ſaphyri præſtantiores, lævio res, &c.
etiam ſaphyrica ſulphura, ſaphyrica ſal
ſaphyrici Mercurii, &c. Idem verum e
am eſt de turconibus & gemmis aliis u
versis. From which paſſage (*Eleutheri*
I ſuppoſe you will think I might wit
out raſhneſs conclude, either that n
opinion is favoured by that of *Paracelſ*
or that *Paracelſus* his opinion was n
alwaies the ſame. But becauſe in dive
other places of his writings he ſeems
talk at a differing rate of the three Pri
ciples and the four Elements, I ſhall co
tent my ſelf to inferr from the alledg
paſſage, that if his doctrine be not co
ſiſtent with that Part of mine which
is brought to countenance, it is ver
difficult to know what his opinion co
cerning Salt, Sulphur and Mercury, wa
and that conſequently we had reaſo
about the beginning of our conference
to decline taking upon us, either t
examine or oppoſe it.

I know not whether I ſhould on thi
occaſion add, that thoſe very bodies, th
Chymiſts call Phlegme and Earth, do ye
recede

cede from an Elementary simplicity. hat common Earth and Water frequently do so, notwithstanding the received contrary opinion, is not deny'd the more wary of the moderne Peripateticks themselves: and certainly most arths are much less simple bodies than commonly imagined even by Chymists, ho do not so considerately to prescribe nd employ Earths Promiscuously in ose distillations that require the mixure of some *caput mortuum*, to hinder he flowing together of the matter, & to etain its grosser parts. For I have found ome Earths to yeeld by distillation a Liquor very far from being inodorous or insipid; and 'tis a known observation that most kinds of fat Earth kept cover'd from the rain, and hindred from spending themselves in the production of vegetables, will in time become impregnated with Salt Petre.

But I must remember that the Water and Earths I ought here to speak of, are such as are separated from mixt Bodies by the fire; and therefore to restrain my Discourse to such, I shall tell you, That we see the Phlegme of Vitriol (for instance) is a very effectual remedie against

againſt burnes; and I know a very F-mous and experienc'd *Phyſitian*, whc: unſuſpected ſecret (himſelf confeſs'd : me) it is, for the diſcuſſing of hard a: Obſtinate Tumours. The Phlegme of V negar, though drawn exceeding leaſure in a digeſting Furnace, I have purpoſe made tryal of; and ſometimes found able to draw, though ſlowly, a ſacch rine ſweetneſs out of Lead; and as remember by long Digeſtion, I diſſolv Corals in it. The Phlegme of the ſuga of Saturne is ſaid to have very peculia properties. Divers Eminent Chymiſ teach, that it will diſſolve Pearls, whic being precipitated by the ſpirit of th ſame Concrete are thereby (as they ſay rendred volatile; which has been con firmed to me, upon his own obſervation by a perſon of great veracity. Th Phlegme of Wine, and indeed divers o other Liquors that are indiſcriminately condemn'd to be caſt away as phlegm are endow'd with qualities that make them differ both from meer water, and from each other; and whereas the Chymiſts are pleas'd to call the *caput mortuum* of wt they have diſtill'd (after they have by affuſion of water drawn away its ſalt)

(lt) *terra damnata*, or Earth, it may be oubted whether or no thoſe Earths e all of them perfectly alike: and it is arce to be doubted, but that there are me of them which remain yet unre- uc'd to an Elementary nature. The hes of wood depriv'd of all the ſalt, id bone-Aſhes, or calcin'd Harts- orn, which Refiners chooſe to make eſts of, as freeſt from Salt, ſeem unlike: id he that ſhall compare either of theſe ſipid aſhes to Lime, and much more the *calx* of Talck, (though by the fuſion of water they be exquiſitely ulcify'd) will perhaps ſee cauſe to think iem things of a ſomewhat differing ature. And it is evident in Colcothar hat the exacteſt calcination, follow'd y an exquiſite dulcification, does not lwaies reduce the remaining body into lementary Earth; for after the ſalt or /itriol (if the Calcination have been oo faint) is drawn out of the Calcothar, he reſidue is not earrh, but a mixt body, ich in Medical vertues (as experience as inform'd me) and which *Angelus Sala* affirmes to be partly reducible into malleable Copper; which I judge very probable; for though when I was ma-

king

king Experiments upon Colcothar I was deſtitute of a Furnace capable f giving a heat intenſe Enough to bri ſuch a Calx to Fuſion; yet having co- jectur'd that if Colcothar abounded w that Metal, *Aqua Fortis* would find t out there, I put ſome dulcifi'd Colc- thar into that *Menſtruum*, and fou the Liquor according to my Expecta- on preſently Colour'd as Highly as if t had been an Ordinary Solution of Co- per.

TH

THE SCEPTICAL CHYMIST

The Fifth Part.

HEre *Carneades* making a pauſe, I muſt not deny (ſaies his Friend o him) that I think You have ſufficintly prov'd that theſe diſtinct Subſtanes which Chymiſts are wont to obtain rom Mixt Bodies, by their Vulgar Diillation, are not pure and ſimple enough to deſerve, in Rigor of ſpeaking, he Name of Elements, or Principles. But I ſuppoſe You have heard, that here are ſome Modern *Spagyriſts*, who give out that they can by further and more Skilfull Purifications, ſo reduce the ſeparated Ingredients of Mixt Bodies to an Elementary ſimplicity, That the

the Oyles (for Instance) extracted fr
all Mixts shall as perfectly resemb
one another, as the Drops of Wat
do.

If you remember (replies *Carneade*) that at the Beginning of our Conferen with *Philoponus*, I declar'd to him b fore the rest of the Company, that I would not engage my self at presen do any more than examine the usu proofs alledg'd by Chymists, for the Vu gar doctrine of their three Hypostatic Principles; You will easily perceive th I am not oblig'd to make answer what you newly propos'd; and that t rather grants, than disproves what I have been contending for: Since by pr tending to make so great a change in t reputed Principles that Distillatio affords the common *Spagyrists*, 'i plainly enough presuppos'd, that befo such Artificial Depurations be mad the Subſtances to be made more simp were not yet simple enough to be look upon as Elementary; Wherefore case the *Artists* you speak of could pe form what they give out they can, y I should not need to be asham'd of h ving question'd the Vulgar Opinio touchin

uching the *Tria Prima*. And as to the
ing it self, I shall freely acknowledge
you, that I love not to be forward
determining things to be impossible;
I I know and have consider'd the
eans by which they are propos'd to be
fected. And therefore I shall not pe-
mptorily deny either the possibility of
hat these *Artists* promise, or my As-
nt to any just Inference; however de-
ructive to my conjectures, that may
e drawn from their performances. But
ve me leave to tell you withall,
hat because such promises are wont
as Experience has more than once in-
rm'd me) to be much more easily
ade, than made good by Chymists, I
ust withhold my Beleef from their as-
rtions, till their Experiments exact it;
nd must not be so easie as to expect
efore hand, an unlikely thing upon no
tronger Inducements than are yet given
ne: Besides that I have not yet found
y what I have heard of these Artists,
hat though they pretend to bring the
everal Substances into which the Fire
as divided the Concrete, to an exqui-
ite simplicity, They pretend also to be
able by the Fire to divide all Concretes,

Minerals, and others, into the sam number of Distinct Substances. An in the mean time I must think it in probable, that they can either truly s parate as many differing Bodies fro Gold (for Instance) or *Ossiocolla*, a we can do from Wine, or Vitriol; (that the Mercury (for Example) (Gold or Saturn would be perfectly (the same Nature with that of Hart horn; and that the sulphur of Antim ny would be but Numerically differe from the Distill'd butter or Oyle of Ro ses.

But suppose (saies *Eleutherius*) th you should meet with Chymists, wh would allow you to take in Earth an Water into the number of the prin ciples of Mixt Bodies; and being all content to change the Ambiguou Name of Mercury for that more in telligible one of spirit, should conse quently make the principles of Com pound Bodies to be Five; would yo not think it something hard to reje so plausible an Opinion, only becaus the Five substances into which the Fir divides mixt Bodies are not exactly pure, and Homogeneous? For my par

(Con

Continues *Eleutherius*) I cannot but think it somewhat strange, in case this Opinion be not true, that it should fall out so luckily, that so great a Variety of Bodies should be Analyz'd by the Fire into just five Distinct Substances; which so little differing from the Bodies that bear those names, may so Plausibly be call'd Oyle, Spirit, Salt, Water, and Earth.

The Opinion You now propose (answers *Carneades*) being another than that I was engag'd to examine, it is not requisite for me to Debate at this present; nor should I have leasure to do it throughly. Wherefore I shall only tell You in General, that though I think this Opinion in some respects more defensible than that of the Vulgar Chymists; yet you may easily enough learn from the past Discourse what may be thought of it: Since many of the Objections made against the Vulgar Doctrine of the Chymists seem, without much alteration, employable against this *Hypothesis* also. For, besides that this Doctrine does as well as the other take it for granted, (what is not easie to be prov'd) that the Fire is the true and Adequate Ana-

lyzer of Bodies, and that all the Di
ſtinct ſubſtances obtainable from a mix
Body by the Fire, were ſo pre-exiſten
in it, that they were but extricated fror
each other by the *Analyſis*; Beſide
that this Opinion, too, aſcribes to th
Productions of the Fire an Elementar
ſimplicity, which I have ſhewn not t
belong to them; and beſides that th
Doctrine is lyable to ſome of the (
ther Difficulties, wherewith That of th
Tria Prima is incumber'd; Beſides a
this, I ſay, this quinary number of E
lements, (if you pardon the Expreſ
on) ought at leaſt to have been r
ſtrain'd to the Generality of Anim
and Vegetable Bodies, ſince not onl
among theſe there are ſome Bodies, (
I formerly argu'd) which, for ougl
yet has been made to appear, do con
ſiſt, either of fewer or more ſimil
ſubſtances than preciſely Five. But i
the Mineral Kingdom, there is ſcarc
one Concrete that has been evinc'd t
be adequatly diviſible into ſuch fiv
Principles or Elements, and neithe
more nor leſſe, as this Opinion woul
have every mixt Body to conſiſt of.

And this very thing (continues *Ca*
neades

eades) may ſerve to take away or leſ-
:n your Wonder, that juſt ſo many
odies as five ſhould be found upon
ıe Reſolution of Concretes. For ſince
e find not that the fire can make any
ch *Analysis* (into five Elements) of
letals and other Mineral Bodies whoſe
exture is more ſtrong and permanent,
remains that the Five Subſtances un-
er conſid-ration be Obtain'd from Ve-
etable and Animal Bodies, which (pro-
ably by reaſon of their looſer Con-
:xture) are capable of being Diſtill'd.
ınd as to ſuch Bodies, 'tis natural e-
ough, that, whether we ſuppoſe that
here are, or are not, preciſely five E-
ements, there ſhould ordinarily occur
ı the Diſſipated parts a five Fold Di-
erſity of Scheme: (if I may ſo ſpeak)
'or if the Parts do not remain all fix'd,
s in Gold, Calcin'd Talck, &c. nor all
:ſcend, as in the Sublimation of Brim-
tone, Camphire, &c. but after their
Diſſipation do aſſociate themſelves into
ıew Schemes of Matter; it is very like-
:y, that they will by the Fire be divided
into fix'd and Volatile (I mean, in Re-
ference to that degree of heat by which
they are deſtill'd) and thoſe Volatile

parts will, for the moſt part, aſcen either in a dry forme, which Chymiſt are pleas'd to call, if they be Taſtleſs Flowers; if Sapid, Volatile Salt; or i a Liquid Forme. And this Liquor mu be either inflamable, and ſo paſs for oy or not inflamable, and yet ſubtile an pungent, which may be call'd Spiri or elſe ſtrengthleſs or inſipid, whic may be nam'd Phlegme, or Wate And as for the fixt part, or *Caput Mo tuum*, it will moſt commonly conſiſt Corpuſcles, partly Soluble in Wate or Sapid, (eſpecially if the Saline par were not ſo Volatile, as to fly away b fore) which make up its fixt ſalt; ar partly inſoluble and inſipid, whic therefore ſeems to challenge the nat of Earth. But although upon this groun one might eaſily enough have foretol, that the differing ſubſtances obtain from a perfectly mixt Body by the Fi would for the moſt part be reducib to the five newly mention'd States f Matter; yet it will not preſently follo, that theſe five Diſtinct ſubſtances we ſimple and primogeneal bodies, ſo pr exiſtent in the Concrete that the fi does but take them aſunder. Beſid

thr

hat it does not appear, that all Mixt lodies, (witneſs, Gold, Silver, Mercu-y, &c.) Nay nor perhaps all Vege-ibles, which may appear by what we iid above of *Camphire*, *Benzoin*, &c. re reſoluble by Fire into juſt ſuch dif-ering Schemes of Matter. Nor will ie Experiments formerly alledg'd per-iit us to look upon theſe ſeparated ubſtances as Elementary, or uncom-ounded. Neither will it be a ſuffici-nt Argument of their being Bodies hat deſerve the Names which Chy-niſts are pleas'd to give them, that hey have an Analogy in point of Conſiſtence, or either Volatility or ixtneſs, or elſe ſome other obvious Quality, with the ſuppos'd Principles, whoſe names are aſcrib'd to them. For, s I told you above, notwithſtanding his Reſemblance in ſome one Quality, here may be ſuch a Diſparity in others, is may be more fit to give them Dif-fering Appellations, than the Reſem-blance is to give them one and the ſame. And indeed it ſeems but ſome-what a groſs Way of judging of the Nature of Bodies, to conclude without Scruple, that thoſe muſt be of the ſame

Nature that agree in ſome ſuch Gene
ral Quality, as Fluidity, Dryneſs, Vo
latility, and the like: ſince each of tho
Qualities, or States of Matter, ma
Comprehend a great Variety of Bo
dies, otherwiſe of a very differing Na
ture; as we may ſee in the Calxes o
Gold, of Vitriol, and of Venetian Talc
compar'd with common Aſhes; whi
yet are very dry, and fix'd by the v
hemence of the Fire, as well as the
And as we may likewiſe gather fro
what I have formerly Obſerv'd, touch
ing the Spirit of Box-Wood, whi
though a Volatile, Sapid, and not infl
mable Liquor, as well as the Spiri
of Harts-horn, of Blood and other,
(and therefore has been hitherto call
the Spirit, and eſteem'd for one of t
Principles of the Wood that affor
it) may yet, as I told You, be ſubdi
vided into two Liquors, differing fro
one another, and one of them at leaſ
from the Generality of other Chymic
Spirits.

But you may your ſelf, if you pleaſe
(purſues *Carneades*) accommodate to t
Hypotheſis you propos'd what other pa
ticulars you ſhall think applicable to

the foregoing Discourse. For I think unseasonable for me to medle now y further with a Controversie, which ice it does not now belong to me, aves me at Liberty to Take my wn time to Declare my Self about

Eleutherius perceiving that *Carneades* as somewhat unwilling to spend any ore time upon the debate of this pinion, and having perhaps some oughts of taking hence a Rise to make im Discourse it more fully another ime, thought not fit as then to make ny further mention to him of the pro-os'd opinion, but told him;

I presume I need not mind you, *Carneades*, That both the Patrons of the ernary number of Principles, and those that would have five Elements, endeavour to back their Experiments with a specious Reason or two; and especially some of those Embracers of the Opinion last nam'd (whom I have convers'd with, and found them Learned men) assigne this Reason of the necessity of five distinct Elements; that otherwise mixt Bodies could not be so compounded and temper'd as to obtain a due consistence

ſiſtence and competent Duration. Fr
Salt (ſay they) is the *Basis* of Solidit;
and Permanency in Compound Bodi(,
without which the other four Elemen;
might indeed be variouſly and loo(r
blended together, but would remain i.
compacted; but that Salt might be d.
ſolv'd into minute Parts, and convey(
to the other Subſtances to be compact(
by it, and with it, there is a Neceſſity
Water. And that the mixture may n:
be too hard and brittle, a Sulphureous
Oyly Principle muſt intervene to mal:
the maſs more tenacious; to this a Me.
curial ſpirit muſt be ſuperadded; whi(
by its activity may for a while permeat,
and as it were leaven the whole Maſ
and thereby promote the more e:
quiſite mixture and incorporation (
the Ingredients. To all which (laſtly)
portion of Earth muſt be added, whic
by its dryneſs and poroſity may ſoa
up part of that water wherein the Sa
was diſſolv'd, and eminently concur
with the other ingredients to give th
whole body the requiſite conſiſtence.

I perceive (ſaies *Carneades* ſmiling
that if it be true, as 'twas lately note(
from the Proverb, *That good Wits hav*

ba

d Memories, You have that Title, as
ell as a better, to a place among the
od Wits. For you have already
ore than once forgot, that I declar'd
you that I would at this Confe-
nce Examine only the Experiments
my Adverſaries, not their Specula-
ve Reaſons. Yet 'tis not (Subjoynes
rneades) for fear of medling with
e Argument you have propos'd, that
decline the examining it at preſent.
or if when we are more at leaſure, you
all have a mind that we may So-
mnly conſider of it together; I am
onfident we ſhall ſcarce finde it inſolu-
le. And in the mean time we may
bſerve, that ſuch a way of Arguing
nay, it ſeems, be ſpecioufly accommoda-
ed to differing *Hypotheses*. For I find
hat *Beguinus*, and other Aſſertors of
he *Tria Prima*, pretend to make out by
uch a way, the requiſiteneſs of their
Salt, Sulphur and Mercury, to conſtitute
mixt Bodies, without taking notice
of any neceſſity of an Addition of Water
and Earth.

And indeed neither ſort of Chymiſts
ſeem to have duly conſider'd how great
Variety there is in the Textures and
Con-

Consistences of Compound Bodies; and how little the consistence and Duration of many of them seem to accommodate and be explicable by the propos'd Notion. And not to mention those almost incorruptible Substances obtainable by the Fire, which I have prov'd to be somewhat compounded, and which the Chymists will readily grant not to be perfectly mixt Bodies: (Not to mention on these, I say) If you will but recall to mind some of those Experiments, whereby I shew'd You that out of common Water only mixt Bodies (and even living ones) of very differing consistences, and resoluble by Fire into as many Principles as other bodies acknowledg'd to be perfectly mixt; may be produced if you do this, I say, you will not, I suppose, be averse from beleeving that Nature by a convenient disposition of the minute parts of a portion of matter may contrive bodies durable enough, & of this, or that, or the other Consistence without being oblig'd to make use of all, much less of any Determinate quantity of each of the five Elements, or of the three Principles to compound such bodies of. And I have (pursues *Carneades*)

ces) ſomething wonder'd, Chymiſts ould not conſider, that there is ſcarce y body in Nature ſo permanent and diſſoluble as Glaſs; which yet themſ ves teach us may be made of bare ſhes, brought to fuſion by the meer olence of the Fire; ſo that, ſince hes are granted to conſiſt but of pure lt and ſimple Earth, ſequeſtred from the other Principles or Elements, ey muſt acknowledge, That even t it ſelf can of two Elements only, , if you pleaſe, one Principle and one lement, compound a Body more duble than almoſt any in the World. hich being undeniable, how will ey prove that Nature cannot comound Mixt Bodies, and even durable nes, under all the five Elements or laterial Principles.

But to inſiſt any longer on this Occaonal Diſquiſition, Touching their Oinion that would Eſtabliſh five Eleents, were to remember as little as ou did before, that the Debate of this atter is no part of my firſt undertakng; and conſequently, that I have alreay ſpent time enough in what I look ack upon but as a digreſſion, or at beſt n Excurſion. And

And thus, *Eleutherius*, (saies *Carte-des*) having at length gone through the four Considerations I propos'd to Discourse unto you, I hold it not unfit, for fear my having insisted so long on each of them may have made you forget the *Series*, briefly to repeat them by telling you, that

Since, in the first place, it may justly be doubted whether or no the Fire be, as Chymists suppose it, the genuine and Universal Resolver of mixt Bodies;

Since we may doubt, in the next place, whether or no all the Distinct Substances that may be obtain'd from a mixt body by the Fire were pre-existent there in the formes in which they were separated from it;

Since also, though we should grant the Substances separable from mixt Bodies by the fire to have been the component Ingredients, yet the Number of such substances does not appear the same in all mixt Bodies; some of them being Resoluble into more differing substances than three, and Others not being Resoluble into so many as three.

And Since, Lastly, those very substances that are thus separated are not for the most

ost part pure and Elementary bodies,
t new kinds of mixts;

Since, I say, these things are so, I hope
u will allow me to inferr, that the
ilgar Experiments (I might perchance
ve Added, the Arguments too) wont
be Alledg'd by Chymists to prove,
at their three Hypostatical Principles
adequately compose all mixt Bodies,
e not so demonstrative as to induce a
ıry Person to acquiesce in their Do-
ine, which, till they Explain and prove
better, will by its perplexing darkness
more apt to puzzle than satisfy con-
lering men, and will to them appear
cumbred with no small Difficulties.

And from what has been hitherto de-
uc'd (Continues *Carneades*) we may
earn, what to Judge of the common
practice of those Chymists, who because
ey have found that diverse compound
odies (for it will not hold in All) can
e resolv'd into, or rather can be brought
afford two or three differing Substan-
s more than the Soot and Ashes,
hereinto the naked fire commonly di-
des them in our Chymnies, cry up their
wn Sect for the Invention of a New
hilosophy, some of them, as *Helmont &c.*
styling

ſtyling themſelves Philoſophers by t- Fire; and the moſt part not only aſc- bing, but as far as in them lies, engr- ſing to thoſe of their Sect the Title f PHILOSOPHERS.

But alas, how narrow is this Philoſ- phy, that reaches but to ſome of the compound Bodies, which we find b upon, or in the cruſt or outſide of our t- reſtrial Globe, which is it ſelf but a po t in compariſon of the vaſt extended U- verſe, of whoſe other and greater pa s the Doctrine of the *Tria Prima* does n t give us an Account! For what does t teach us, either of the Nature of the Su , which Aſtronomers affirme to be eig - ſcore & odd times bigger than the wh e Earth? or of that of thoſe numerous f t Starrs, which, for ought we know, wo d very few, if any of them, appear infe - our in bulke and brightneſs to the Sun f they were as neer us as He? What do s the knowing that Salt, Sulphur a d Mercury, are the Principles of Mixt B- dies, informe us of the Nature of th t vaſt, fluid, and Ætherial Subſtanc , that ſeems to make up the interſt- lar, and conſequently much the gre- teſt part of the World? for as for te opini

pinion commonly ascrib'd to *Paracel-*
sus, as if he would have not only the
our Peripatetick Elements, but even
he Celestial parts of the Universe to
onsist of his three Principles, since the
odern Chymists themselves have not
ought so groundless a conceit worth
heir owning, I shall not think it worth
y confuting.

But I should perchance forgive the Hy-
othesis I have been all this while exa-
ining, if, though it reaches but to a ve-
y little part of the World, it did at
east give us a satisfactory account of
hose things to which 'tis said to reach.
But I find not, that it gives us any other
han a very imperfect information even
bout mixt Bodies themselves: For how
vill the knowledge of the *Tria Prima*
liscover to us the Reason, why the Load-
tone drawes a Needle, and disposes it
o respect the Poles, and yet seldom pre-
isely points at them? how will this Hy-
othesis teach Us how a Chick is formed
n the Egge, or how the Seminal Princi-
ples of Mint, Pompions, and other Ve-
getables, that I mention'd to You above,
can fashion Water into Various Plants,
each of them endow'd with its peculiar

and determinate ſhape, and with diver ſpecifick and diſcriminating Qualities How does this Hypotheſis ſhew us, ho much Salt, how much Sulphur, and ho much Mercury muſt be taken to make Chick or a Pompion? and if We kno that: what Principle is it, that manag theſe Ingredients, and contrives (for i ſtance) ſuch Liquors as the White an Yolk of an Egge into ſuch a variety Textures as is requiſite to faſhion t Bones, Veines, Arteries, Nerves, Te dons, Feathers, Blood, and other par of a Chick; and not only to faſhio each Limbe, but to connect them altoge ther, after that manner that is mo congruous to the perfection of the An mal which is to Conſiſt of Them? Fo to ſay, that ſome more fine and ſubtil part of either or all the Hypoſtatica Principles is the Director in all this buſi neſs, and the Architect of all this Elabo rate ſtructure, is to give one occaſion t demand again, what proportion an way of mixture of the *Tria Prima* affor ded this *Architectonick* Spirit, and wha Agent made ſo skilful and happy a mix ture? And the Anſwer to this Queſtion if the Chymiſts will keep themſelve

with-

vithin their three Principles, will be ly-
ble to the ſame Inconvenience, that the
Anſwer to the former was. And if it
ere not to intrench upon the Theame
f a Friend of ours here preſent, I could
aſily proſecute the Imperfections of
ie Vulgar Chymiſts Philoſophy, and
iew you, that by going about to expli-
ate by their three Principles, I ſay not,
ll the abſtruſe Properties of mixt Bo-
ies, but even ſuch Obvious and more
miliar *Phænomena* as *Fluidity* & *Firm-
eſs*, The Colours and Figures of Stones,
ſinerals, and other compound Bodies,
he Nutrition of either Plants or Ani-
als, the Gravity of Gold or Quickſilver
ompar'd with Wine or Spirit of Wine;
y attempting, I ſay, to render a reaſon
f theſe (to omit a thouſand others as
ifficult to account for) from any pro-
ortion of the three ſimple Ingredients,
hymiſts will be much more likely to
iſcredit themſelves and their *Hypothe-
s*, than ſatisfy an intelligent Inquirer
fter Truth.

But (interpoſes *Eleutherius*) This Ob-
ection ſeems no more than may be made
gainſt the four Peripatetick Elements.
And indeed almoſt againſt any other *Hy-*

potheſis, that pretends by any Determ nate Number of Material Ingredients t render a reaſon of the *Phænomena* of N ture. And as for the uſe of the Chym cal Doctrine of the three Principles, ſuppoſe you need not be told by me that The great Champion of it, Th Learned *Sennertus*, aſſignes this nob uſe of the *Tria Prima*, That from The as the neereſt and moſt Proper Prin ples, may be Deduc'd and Demonſtrat the Properties which are in Mixt B dies, and which cannot be Proximate (as They ſpeak) deduc'd from the El ments. And This, ſaies he, is chiefl Apparent, when we Inquire into t Properties and Faculties of Med cines. And I know (continues *Le therius*) That the Perſon You ha aſſum'd, Of an Opponent of the *He metick Doctrine*, will not ſo far preva againſt your Native and wonted Equi as To keep You from acknowledgi that Philoſophy is much beholden the Notions and Diſcoveries of Ch miſts.

Senn. *de Conſ. & Diſſen. p.* 165,

If the Chymiſts You ſpeak of (R plyes *Carneades*) had been ſo modeſ or ſo Diſcreet, as to propoſe their O

pinio

inion of the *Tria Prima*, but as a Noti-
n uſeful among Others, to increaſe
umane knowledge, they had deſerv'd
ore of our thanks, and leſs of our Op-
ſi ion; but ſince the Thing, that they
etend, is not ſo much to contribute a
otion toward the Improvement of
hiloſophy, as to make this Notion (at-
nded by a few leſs conſiderable ones)
ais for a New Philoſophy it ſelf; Nay,
ce they boaſt ſo much of this phancie
f theirs, that the famous *Quercetanus*
uples not to write, that if his moſt
ertain Doctrine of the three Principles
ere ſufficiently Learned, Examin'd,
nd Cultivated, it would eaſily Diſpel
ll the Darkneſs that benights our
inds, and bring in a Clear Light, that
ould remove all Difficulties: This
chool affording Theorems and Axioms
refragable, and to be admitted with-
ut Diſpute by impartial Judges; and ſo
feful withal, as to exempt us from the
eceſſity of having recourſe, for want of
he knowledge of cauſes, to that Sanctu-
ry of the ignorant, Occult Qualities;
nce I ſay, this Domeſtick Notion of the
hymiſts is ſo much overvalued by them,
cannot think it unfit, they ſhould be

made ſenſible of their miſtake; and b
admoniſh'd to take in more fruitful an
comprehenſive Principles, if they mea
to give us an account of the *Phænome*
of Nature; and not confine themſelve
and (as far as they can) others, t
ſuch narrow Principles, as I fear wi
ſcarce enable them to give an accou
(I mean an intelligible one) of the ten
part (I ſay not) of all the *Phænomena*
Nature; but even of all ſuch as by t
Leucippian or ſome of the other ſorts
Principles may be plauſibly enough e
plicated. And though I be not unwillin
to grant, that the incompetency I im
pute to the Chymical *Hypotheſis* is b
the ſame which may be Objected again
that of the four Elements, and dive
other Doctrines that have been mai
tain'd by Learned men; yet ſince 'tis t
Chymical *Hypothesis* only which I a
now examining, I ſee not why, if what
impute to it be a real inconvenience, e
ther it ſhould ceaſe to be ſo, or I ſhou
ſcruple to object it, becauſe other Th
ories are lyable thereunto, as well as t
Hermetical. For I know not why
Truth ſhould be thought leſs a Tru
for the being fit to overthrow variety
Errors,

I am oblig'd to You (continues *Carneles*, a little ſmiling) for the favourable opinion You are pleas'd to expreſs of y Equity, if there be no deſigne in it. ut I need not be tempted by an Artifice, or invited by a Complement, to acnowledge the great ſervice that the Labours of Chymiſts have done the Lovers uſeful Learning; nor even on this occaſion ſhall their Arrogance hinder my ratitude. But ſince we are as well examining the truth of their Doctrine, as ie merit of their induſtry, I muſt in order to the inveſtigation of the firſt, connue a reply, to talk at the rate of the art I have aſſum'd; And tell you, that hen I acknowledge the uſefulneſs of ie Labours of *Spagyriſts* to Natural hiloſophy, I do it upon the ſcore of ieir experiments, not upon that of heir Speculations; for it ſeems to me, iat their Writings, as their Furnaces, ford as well ſmoak as light; and do ttle leſs obſcure ſome ſubjects, than ey illuſtrate others. And though I am nwilling to deny, that 'tis difficult for man to be an Accompliſht Naturaliſt, hat is a ſtranger to Chymiſtry; yet I ook upon the common Operations and

practices of Chymists, almost as I do o
the Letters of the Alphabet, withou
whose knowledge 'tis very hard for
man to become a Philosopher; and ye
that knowledge is very far from bein
sufficient to make him One.

But (saies *Carneades*, resuming a mo
serious Look) to consider a little mo
particularly what you alledg in favo
of the Chymical Doctrine of the *Tr*
Prima, though I shall readily ackno
ledge it not to be unuseful, and that th
Divisers and Embracers of it have don
the Common-Wealth of Learning son
service, by helping to destroy that e
cessive esteem, or rather veneratio
wherewith the Doctrine of the four El
ments was almost as generally, as und
servedly entertain'd; yet what has bee
alledg'd concerning the usefulness
the *Tria Prima*, seems to me liable to n
contemptible Difficulties.

And first, as for the very way of Pr
bation, which the more Learned ar
more Sober Champions of the Chymic
cause employ to evince the Chymic
Principles in Mixt Bodies, it seems to n
to be farr enough from being convi
cing. This grand and leading Argumen
you

your *Sennertus* Himself, who layes Great weight upon it, and tells us, that the most Learned Philosophers employ this way of Reasoning to prove the most important things, proposes thus: *Ubicunque* (saies he) *pluribus eædem affectiones & qualitates insunt, per commune quoddam Principium insint necesse est, sicut omnia sunt Gravia propter terram, calida propter Ignem. At Colores, Odores, Sapores, esse φλογιστὸν, & similia alia, mineralibus, Metallis, Gemmis, Lapidibus, Plantis, Animalibus insunt. Ergo per commune aliquod principium, & subjectum, insunt. At tale principium non sunt Elementa. Nullam enim habent ad tales qualitates producendas potentiam. Ergo alia principia, unde fluant, inquirenda sunt.*

In the Recital of this Argument, (saies *Carneades*) I therefore thought it to retain the Language wherein the Author proposes it, that I might also retaine the propriety of some Latine Termes, to which I do not readily remember any that fully answer in English. But as for the Argumentation it self, 'tis built upon a precarious supposition, that seems to me neither Demonstrable nor true; for, how does it appear

appear, that where the same Quality is to be met with in many Bodies, it must belong to them upon the Account of some one Body whereof they all partake? (For that the Major of our Authors Argument is to be Understood of the Material Ingredients of bodies appears by the Instances of Earth and Fire he annexes to explain it.) For to begin with that very Example which he is pleas'd to alledge for himself; how can he prove, that the Gravity of all Bodies proceeds from what they participate of the Element of Earth? Since we see, that not only common Water, but the more pure Distill'd Rain Water is heavy; and Quicksilver is much heavier than Earth it self; though none of my Adversaries has yet prov'd, that it contains any of that Element. And I the Rather make use of this Example of Quicksilver, because I see not how the Assertors of the Elements will give any better Account of it than the Chymists. For if it be demanded how it comes to be Fluid, they will answer, that it participates much of the Nature of Water. And indeed, according to them, Water

may

ay be the Predominant Element in it, since we see, that severall Bodies, which by Distillation afford Liquors that weigh more than their *Caput Mortuum*, do not yet consist of Liquor enough to be Fluid. Yet if it be demanded how Quicksilver comes to be so heavy, then 'tis reply'd, that 'tis by reason of the Earth that abounds in it; but since, according to them, it must consist also of air, and partly of Fire, which they affirme to be light Elements, how comes it that it should be so much heavier than Earth of the same bulk, though to fill up the porosities and other Cavities it be made up into a mass or paste with Water, which it self they allow to be a heavy Element. But to returne to our *Spagyrists*, we see that Chymical Oyles and fixt Salts, though never so exquisitely purify'd and freed from terestrial parts, do yet remain ponderous enough. And Experience has inform'd me, that a pound, (for instance) of some of the heaviest Woods, as *Guajacum*, that will sinke in Water, being burnt to Ashes will yeeld a much less weight of them (whereof I found but a small part to be Alcalizate) than much lighter

er Vegetables: As also that the bla
Charcoal of it will not sink as did t
wood, but swim; which argues that t
Differing Gravity of Bodies procee
chiefly from the particular Texture,
is manifest in Gold, the closest a
Compactest of Bodies, which is ma
times heavier than we can possibly ma
any parcel of Earth of the same Bul
I will not examine, what may be a
gu'd touching the Gravity or Quali
Analogous thereunto, of even Celesti
bodies, from the motion of the spots
bout the Sun, and from the appearin
equality of the suppos'd Seas in t
Moon; nor consider how little tho
Phænomena would agree with what *Se*
nertus presumes concerning Gravity. B
further to invalidate his supposition,
shall demand, upon what Chymic
Principle Fluidity depends? And yet Flu
idity is, two or three perhaps excepte
the most diffused quality of the univers
and far more General than almost an
other of those that are to be met wit
in any of the Chymical Principles, o
Aristotelian Elements; since not onl
the Air, but that vast expansion w
call Heaven, in comparison of whic
ou

ur Terrestrial Globe (supposing it were l Solid) is but a point; and perhaps o the Sun and the fixt Stars are fluid odies. I demand also, from which the Chymical Principles Motion owes; which yet is an affection of atter much more General than any at can be deduc'd from any of the ree Chymical Principles. I might k the like Question concerning Light, hich is not only to be found in the indl'd Sulphur of Mixt Bodies but (not o mention those sorts of rotten Woods, nd rotten Fish that shine in the Dark) the tails of living Glow-wormes, nd in the Vast bodies of the Sun and tars. I would gladly also know, in hich of the three Principles the Qua- ty, we call Sound, resides as in its roper Subject; since either Oyl fal- ng upon Oyle, or Spirit upon Spirit, r Salt upon Salt, in a great quantity, nd from a considerable height, will nake a noise, or if you please, create .found, and (that the objection may each the *Aristotelians*) so will also wa- er upon water, and Earth upon Earth. And I could name other qualities to be met with in divers bodies, of which I sup-

ſuppoſe my Adverſaries will not in ha
aſſign any Subject, upon whoſe Accou
it muſt needs be, that the quality b
longs to all the other ſeveral bodies.

And, before I proceed any further
muſt here invite you to compare t
ſuppoſition we are examining, wi
ſome other of the Chymical Tenen
For, firſt they do in effect teach, th
more than one quality may belong t
and be deduc'd from, one Princip
For, they aſcribe to Salt, Taſts, and t
power of Coagulation; to ſulphur,
well Odours as inflamableneſs; A
ſome of them aſcribe to Mercury, C
lours; as all of them do effumability
as they ſpeak. And on the other ſide,
is evident that Volatility belongs i
common to all the three Principles
and to Water too. For 'tis manifeſt th
Chymical Oyles are Volatile; That a
ſo divers Salts, Emerging upon the A
nalyſis of many Concretes, are very Vo
latile, is plain from the fugitiveneſs o
Salt, of Harts-horne, fleſh, &c. aſcend
ing in the Diſtillation of thoſe bodies
How eaſily water may be made to aſ
cend in Vapours, there is ſcarce any
body that has not obſerv'd. And a

fo

f what they call the Mercurial Prin-
ole of bodies, that is so apt to be rais'd,
i the form of Steam, that *Paracelsus*
d others define it by that aptness to
f up; so that (to draw that inference
t the way) it seems not that Chy-
ists have been accurate in their Do-
ine of qualities, and their respective
inciples, since they both derive seve-
l qualities from the same Principle,
d must ascribe the same quality to al-
ost all their Principles and other bo-
es besides. And thus much for the first
ing taken for granted, without suffi-
ent proof, by your *Sennertus*: And to
d that upon the By (continues *Carne-
es*) we may hence learn what to judge
the way of Argumentation, which
at fierce Champion of the *Aristote-
ans* against the Chymists, *Anthonius
Cantherus Billichius* employes, where he
retends to prove against *Beguinus*, that
ot only the four Elements do imme-
iately concurr to Constitute every mixt
ody, and are both present in it, and
btainable from it upon its Dissolution;
ut that in the *Tria Prima* themselves,
hereinto Chymists are wont to resolve
ixt Bodies, each of them clearly dis-

In Thessalo redivivo. Cap. 10. pag. 73. & 74.

covers

covers it self to consist of four Elemen
The Ratiocination it self (pursues *Ca*
neades) being somewhat unusual, I d
the other Day Transcribe it, and (sai
He, pulling a Paper out of his Pocke
it is this. *Ordiamur, cum Beguino, à lig*
viridi, quod si concremetur, videbis in
dore Aquam, in fumo Aerem, in flamma
Prunis Ignem, Terram in cineribus: Q
si Beguino placuerit ex eo colligere hun
dum aquosum, cohibere humidum olea
nosum, extrahere ex cineribus salem;
go ipsi in unoquoque horum seorsim qua
or Elementa ad oculum demonstrabo, eod
artificio quo in ligno viridi ea demonstra
Humorem aquosum admoveho Igni. Ip
Aquam Ebullire videbit, in Vapore Aer
conspiciet, Ignem sentiet in æstu, plus min
Terræ in sedimento apparebit. Hum
porro Oleaginosus aquam humiditate & fi
iditate per se, accensus vero Ignem fla
ma prodit, fumo Aerem, fuligine, nido
& amurca terram. Salem denique ip
Beguinus siccum vocat & Terrestrem, q
tamen nec fusus Aquam, nec caustica vi i
nem celare potest; ignis vero violentia
halitus versus nec ab Aere se alienum e
demonstrat; Idem de Lacte, de Ovis, de J
mine Lini, de Caryophyllis, de Nitr

e sale Marino, denique de Antimonio, quod uit de Ligno viridi Judicium; eadem de lorum partibus, quas Beguinus *adduxit, ntentia, quæ de viridis ligni humore uoso, quæ de liquore ejusdem oleoso, quæ sale fuit.*

This bold Discourse (resumes *Carneas*, putting up again his Paper) I think were not very difficult to confute, if s Arguments were as considerable, as ir time will probably prove short for ie remaining and more necessary Part f my Discourse; wherefore referring ou for an Answer to what was said conrning the Dissipated Parts of a burnt iece of green Wood, to what I told *hemistius* on the like occasion, I might usily shew You, how slightly and supercially our *Guntherus* talks of the divi.ng the flame of Green Wood into his our Elements; when he makes that vaour to be Air, which being caught in lasses and condens'd, presently discoers it self to have been but an Aggreate of innumerable very minute drops f Liquor; and when he would prove the hlegmes being compos'd of Fire by hat Heat which is adventitious to the Liquor, and ceases upon the absence of

what produc'd it (whether that be a
Agitation proceeding from the motic
of the External Fire, or the presence of
Multitude of igneous Atomes pervadin
the pores of the Vessel, and nimbly pe
meating the whole Body of the Wate
I might, I say, urge these and dive
other Weaknesses of his Discourse. B
I will rather take Notice of what is mo
pertinent to the Occasion of this Digre
sion, namely, that Taking it for Grante
that Fluidity (with which he unwari
seems to confound Humidity) must pr
ceed from the Element of Water, h
makes a Chymical Oyle to Consist
that Elementary Liquor; and yet in th
very next Words proves, that it consi
also of Fire, by its Inflamability; not r
membring that exquisitely pure Spirit
Wine is both more Fluid than Wat
it self, and yet will Flame all awa
without leaving the Least Aqueou
Moisture behind it; and without suc
an *Amurca* and Soot as he would De
duce the presence of Earth from. S
that the same Liquor may according t
his Doctrine be concluded by its grea
Fluidity to be almost all Water; an
by its burning all away to be all disguise
Fir

Fire. And by the like way of Probation our Author would ſhew that the fixt ſalt of Wood is compounded of the four Elements. For (ſaies he) being turn'd by the violence of the Fire into ſteames, it ſhews it ſelf to be of kin to Air; whereas I doubt whether he ever ſaw a true fixt Salt (which to become ſo, muſt have already endur'd the violence of an Incinerating Fire) brought by the Fire alone to aſcend in the Forme of Exhalations; but I do not doubt that if he did, and had caught thoſe Exhalations in convenient Veſſels, he would have found them as well as the Steames of common Salt, &c. of a Saline, and not an Aëreal Nature. And whereas our Author takes it alſo for Granted, that the Fuſibility of Salt muſt be Deduc'd from Water, it is indeed ſo much the Effect of heat variouſly agitating the Minute Parts of a Body, without regard to Water, that Gold (which by its being the heavieſt and fixteſt of Bodies, ſhould be the moſt Earthy) will be brought to Fuſion by a ſtrong Fire; which ſure is more likely to drive away, than increaſe its Aqueous Ingredient, if it have any; and on the other ſide, for want of a ſufficient

agitation of its minute parts, Ice is not Fluid, but Solid; though he presumes also that the Mordicant Quality of Bodies must proceed from a fiery ingredient; whereas, not to urge that the Light and inflamable parts, which are the most likely to belong to the Element of Fire, must probably be driven away by that time the violence of the Fire has reduc'd the Body to ashes; Not to urge this, I say, nor that Oyle of Vitriol which quenches Fire, burnes the Tongue and flesh of those that Unwarily taste or apply it, as a Caustick doth, it is precarious to prove the Presence of Fire in fixt salts from their Caustick power, unless it were first shewn, that all the Qualities ascribed to salts must be deduc'd from those of the Elements; which, had I Time, I could easily manifest to be no easy task. And not to mention that our Author makes a Body, as Homogeneous, as any he can produce for Elementary, belong both to Water and Fire, Though it be neither Fluid nor Insipid, like Water; nor light and Volatile, like Fire; he seems to omit in this Anatomy the Element of Earth, save that he intimates, That the salt may pass for that:

that: But since a few lines before, he takes Ashes for Earth, I see not how he will avoid an Inconsistency either betwixt the Parts of his Discourse, or betwixt some of them and his Doctrine. For since there is a manifest Difference betwixt the Saline and the insipid Parts of Ashes, I see not how substances, That Disagree in such Notable Qualities, can be both said to be Portions of an Element, whose Nature requires that it be Homogeneous, especially in this case where an *Analysis* by the Fire is supposs'd to have separated it from the admixture of other Elements, which are confess'd by most *Aristotelians* to be Generally found in common Earth, and to render it impure. And sure if when we have consider'd for how little Disparities sake the Peripatetick make these Symbolizing Bodies, Aire and Fire, to be two Distinct Elements, we shall also consider that the Saline part of Ashes is very strongly Tasted, and easily soluble in Water; whereas the other part of the same Ashes is insipid and indissoluble in the same Liquor: Not to add, that the one substance is Opacous, and the other some-

what Diaphanous, nor that they differ in Divers other Particulars; If we consider those things, I say, we shall hardly think that both these Substances are Elementary Earth; And as to what is sometimes objected, that their Saline Tast is only an Effect of Incineration and Aduſtion, it has been elsewhere fully reply'd to, when propos'd by *Themistius* and where it has been prov'd against him, that however insipid Earth may perhaps by Additaments be turn'd into Salt, yet 'tis not like it should be so by the Fire alone: For we see that when we refine Gold and Silver, the violentest Fires We can Employ on them give them not the least Relish of Saltness. And I think *Philoponus* has rightly observ'd, that the Ashes of some Concretes contain very little salt if any at all; For Refiners suppose that bone ashes are free from it, and therefore make use of them for Tests and Cuppels which ought to be Destitute of Salt lest the Violence of the Fire should bring them to Vitrification; And having purposely and heedfully tasted a Cuppel made of only bone-ashes and fair Water, which I had caus'd to be exposed

pos'd to a Very Violent Fire, acuated by the Blaſt of a large pair of Double Bellows, I could not perceive that the force of the Fire had imparted to it the leaſt Saltneſs, or ſo much as made it leſs Inſipid.

But (ſaies *Carneades*) ſince neither You nor I love Repetitions, I ſhall not now make any of what elſe was urg'd againſt *Themiſtius*, but rather invite You to take notice with me, that when our Authour, though a Learned Man, and one that pretends skill enough in Chymiſtry to reforme the whole Art, comes to make good his confident Undertaking, to give us an ocular Demonſtration of the immediate Preſence of the four Elements in the reſolution of Green Wood, He is fain to ſay things that agree very little with one another. For about the beginning of that paſſage of His lately recited to you, he makes the Sweat, as he calls it, of the green Wood to be Water, the ſmoak Aire, the ſhining Matter Fire, and the Aſhes Earth; whereas a few lines after, he will in each of theſe, nay (as I juſt now noted) in one Diſtinct Part of the Aſhes, ſhew the four Elements. So that either the former *Ana-*

lysis muſt be incompetent to prove tha
Number of Elements, ſince by it th
burnt Concrete is not reduc'd into Ele
mentary Bodies, but into ſuch as are ye
each of them compounded of the fou
Elements; or elſe theſe Qualities, fron
which he endeavours to deduce th
preſence of all the Elements in the fix
ſalt, and each of the other ſeparate
ſubſtances, will be but a precarious wa
of probation: eſpecially if you conſide
that the extracted *Alcali* of Wood, being
for ought appears, at leaſt as ſimilar
Body, as any that the Peripateticks ca
ſhew us, if its differing Qualities muſ
argue the preſence of Diſtinct Elements
it will ſcarce be poſſible for them by a
ny way they know of employing the fir
upon any Body, to ſhew that any Bod
is a Portion of a true Element: And thi
recals to my mind, that I am now bu
in an occaſional excurſion, which aim
ing only to ſhew, that the Peripatetick
as well as the Chymiſts take in our pre
ſent Controverſie ſomething for gran
ted, which they ought to prove, I ſhal
returne to my exceptions, where I endec
the firſt of them, and further tell you
that neither is that the only precarious
thing

thing that I take notice of in *Sennertus* his Argumentation; for when he infers, that because the Qualities he mentions, as Colours, Smels, and the like, belong not to the Elements, they therefore must to the Chymical Principles; he takes that for granted; which will not in haste be prov'd; as I might here manifest, but that I may by and by have a fitter opportunity to take notice of it. And thus much at present may suffice to have Discours'd against the Supposition, that almost every Quality must have some ἀκτὴν πρῶτον, as they speak, some Native receptacle, wherein and in its proper Subject of inhesion it peculiarly resides; and on whose account that quality belongs to the other Bodies, Wherein it is to be met with. Now this Fundamental supposition being once Destroy'd, whatsoever is built upon it, must fall to ruine of it self.

But I consider further, that Chymists are (for ought I have found) far from being able to explicate by any of the *Materia Prima*, those qualities which they pretend to belong primarily unto it, and in mixt Bodies to Deduce from it. 'Tis true indeed, that such qualities

are

are not explicable by the four E.
ments; but it will not therefore follo,
that they are so by the three Hermetic
Principles; and this is it that seems
have deceiv'd the Chymists, and is i.
deed a very common mistake amon
most Disputants, who argue as if the
could be but two Opinions concerni
the Difficulty about which they co.
tend; and consequently they inferr, th
if their Adversaries Opinion be Error.
ous, Their's must needs be the Trut
whereas many questions, and especial
in matters Physiological, may admit
so many Differing *Hypotheses*, that 'tw
be very inconsiderate and fallacious
conclude (except where the Opinio
are precisely Contradictory) the Tru
of one from the falsity of another. At
in our particular case 'tis no way nece.
sary, that the Properties of mixt Bodi
must be explicable either by the He.
metical, or the *Aristotelian Hypothesis*
there being divers other and mo
plausible waies of explaining them, an
especially that, which deduces qualiti
from the motion, figure, and contr
vance of the small parts of Bodies; as
think might be shewn, if the attemp
wer

were as seasonable, as I fear it would be tedious.

I will allow then, that the Chymists did not causelesly accuse the Doctrine of the four Elements of incompetency to explain the Properties of Compound Bodies. And for this Rejection of a Vulgar Error, they ought not to be deny'd what praise men may deserve for exploding a Doctrine whose Imperfections are so conspicuous, that men need but not to shut their Eyes, to discover them. But I am mistaken, if our Hermetical Philosophers Themselves need not, as well as the Peripateticks, have Recourse to more Fruitfull and Comprehensive Principles than the *Tria Prima*, to make out the Properties of the Bodies they converse with. Not to accumulate Examples to this purpose, (because I hope for a fitter opportunity to prosecute this Subject) let us at present only point at Colour, that you may guess by what they say of so obvious and familiar a Quality, how little Instruction we are to expect from the *Tria Prima* in those more abstruse Lines, which they with the *Aristotelians* stile Occult. For about Colours, neither

ther do they at all agree among th n-
ſelves, nor have I met with any one, of
which of the three Perſwaſions ſoev r,
that does intelligibly explicate The n.
The Vulgar Chymiſts are wont to ſ-
cribe Colours to Mercury; *Paracelſus* n
divers places attributes them to S.l;
and *Sennertus*, having recited their (f-
fering Opinions, Diſſents from bo ;
and referrs Colours rather unto Sl-
phur. But how Colours do, nay, h v
they may, ariſe from either of th e
Principles, I think you will ſcarce y
that any has yet intelligibly explica l.
And if Mr. *Boyle* will allow me to ſh w
you the Experiments which he has c-
lected about Colours, you will, I dou t
not, confeſs that bodies exhibite colou ,
not upon the Account of the Predon-
nancy of this or that Principle in the ,
but upon that of their Texture, and -
ſpecially the Diſpoſition of their ſupe-
ficial parts, whereby the Light rebou -
ding thence to the Eye is ſo modifi'd, s
by differing Impreſſions variouſly t
affect the Organs of Sight. I might he e
take notice of the pleaſing variety (
Colours exhibited by the Triangul
glaſs (as 'tis wont to be call'd) and d
manc

De Conſ. & diffen- cap. 11. *pag.* 186.

d, what addition or decrement of
er Salt, Sulphur, or Mercury, befalls
Body of the Glass by being Prisma-
figur'd; and yet 'tis known, that
that shape it would not af-
those colours as it does. But be-
e it may be objected, that these are
real, but apparent Colours; that I
not lose time in examining the
inction, I will alledge against the
mists, a couple of examples of Real
Permanent Colours Drawn from
alline Bodies; and represent, that
ithout the addition of any extraneous
oy, Quicksilver may by the Fire a-
e, and that in glasse Vessels, be de-
r'd of its silver like Colour, and be
n'd into a red Body; and from this
Body without Addition likewise
be obtain'd a Mercury bright and
cular as it was before; So that I have
e a lasting Colour Generated and
troy'd (as I have seen) at pleasure,
hout adding or taking away either
Mercury, Salt, or Sulphur; and if you
ae a clean and slender piece of har-
d'd steel, and apply to it the flame
a candle at some little distance short
the point, You shall not have held
the

the Steel long in the flame, but you shall perceive divers Colours, as Yellow, Red and Blew, to appear upon the Surface of the metal, and run as it were run along in chase of one another towards the point; So that the same body, and that in one and the same part, may not only have a new colour produc'd in it, but exhibite successively divers Colours within a minute of an hour, or thereabouts; and any of these Colours may by Removing the Steel from the Fire, become Permanent, and last many years. And this Production and Variety of Colours cannot reasonably be suppos'd to proceed from the Accession of any of the three Principles, to which of them soever Chymists will be pleas'd to ascribe Colours; especially considering, that if you but suddenly Refrigerate that Iron, first made Red hot, it will be harden'd and Colourless again; and not only by the Flame of a Candle, but by any other equivalent heat Conveniently applied, the like Colours will again be made to appear and succeed one another, as at the First. But I must not any further prosecute an Occasional Discourse, though

that

at were not so Difficult for me to
, as I fear it would be for the Chy-
s to give a better Account of the
her Qualities, by their Principles, than
ey have done of Colours. And your
nnertus Himself (though an Author I
ich value) would I fear have been ex-
edingly puzi'd to resolve, by the *Tria*
ima, halfe that Catalogue of Pro-
lems, which he challenges the Vulgar
ripateticks to explicate by their four
ements. And supposing it were true,
at Salt or Sulphur were the Princi-
le to which this or that Quality may
peculiarly referr'd, yet though he
at teaches us this, teaches us some-
ing concerning That quality, yet he
eaches us but something. For indeed
does not Teach us That which can
any Tolerable measure satisfie an in-
isitive Searcher after Truth. For
hat is it to me to know, that such a
uality resides in such a Principle or E-
lment, whilst I remain altogether ig-
rant of the Cause of that quality,
d the manner of its production and
peration? How little do I know more
an any Ordinary Man of Gravity, if
know but that the Heavines of mixt

Sennert. *de Consens. & Dissens.* *pag.* 165. 166.

bodies

bodies proceeds from that of the Ear
they are compos'd of, if I know not t
reason why the Earth is Heavy? A
how little does the Chymist teach t
Philosopher of the Nature of Purgat
on, if he only tells him that the Purg
tive Vertue of Medicines resides in the
Salt? For, besides that this must n
be conceded without Limitation, sin
the purging parts of many Vegetabl
Extracted by the Water wherein th
are infus'd, are at most but such cor
pounded Salts, (I mean mingl'd wi
Oyle, and Spirit, and Earth, as Tart
and divers other Subjects of the Veget
ble Kingdom afford) And since too th
Quicksilver precipitated either wi
Gold, or without Addition, into a pow
der, is wont to be strongly enough C
thartical, though the Chymists have no
yet prov'd, that either Gold or Mercu
ry have any Salt at all, much less an
that is Purgative; Besides this, I say
how little is it to me, to know Tha
'tis the Salt of the Rhubarb (for In
stance) that purges, if I find That
does not purge as Salt; since scarce an
Elementary Salt is in small quantity Ca
thartical. And if I know not how
pur

urgation in general is effected in a Hu-
ane Body? In a word, as 'tis one
ing to know a mans Lodging, and
nother, to be acquainted with him; so
may be one thing to know the subject
herein a Quality principally resides,
d another thing to have a right notion
d knowledg of the quality it self. Now
at which I take to be the reason of
is Chymical Deficiency, is the same
on whose account I think the *Aristo-*
lian and divers other Theories incom-
tent to explicate the Origine of Qua-
ties. For I am apt to think, that men
ill never be able to explain the *Phæno-*
ena of Nature, while they endeavour to
duce them only from the Presence and
roportion of such or such material In-
edients, and consider such ingredients
Elements as Bodies in a state of rest;
hereas indeed the greatest part of the
fections of matter, and consequently
the *Phænomena* of nature, seems to de-
end upon the motion and the contri-
nce of the small parts of Bodies. For
is by motion that one part of matter
ts upon another; and 'tis, for the most
art, the texture of the Body upon which
he moving parts strike, that modifies y
motion

motion or Impression, and concurrs wit it to the production of those Effect which make up the chief part of the Na turalists Theme.

But (saies *Eleutherius*) me thinks fr all this, you have left some part of wh I alledg'd in behalf of the three princ ples, unanswer'd. For all that you hav said will not keep this from being useful Discovery, that since in the Sa of one Concrete, in the Sulphur of an ther, and the Mercury of a third, th Medicinal vertue of it resides; that Prin ciple ought to be separated from th rest, and there the desired faculty mu be sought for.

I never denyed (Replies *Carneade*. that the Notion of the *Tria Prima* ma be of some use, but (continues he laugh ing) by what you now alledg for i it will but appear, That it is useful to A pothecaries, rather than to Philoso phers: The being able to make thing Operative being sufficient to those whereas the Knowledge of Causes is th Thing looked after by These. And le me Tell You, *Eleutherius*, even this i self will need to be entertained wit some caution.

For first, it will not presently follow, That if the Purgative or other vertue of a Simple may be easily extracted by Water or Spirit of Wine, it Resides in the Salt or Sulphur of the Concrete; Since unless the Body hath before been resolved by the Fire, or some Other Powerful Agent, it will, for the most part, afford in the Liquors I have named, rather the finer compounded parts of it self, Than the Elementary ones. As noted before, That Water will dissolve not only pure Salts, but Chrystals of Tartar, Gumme Arabick, Myrrhe and Other Compound Bodies. As also Spirit of Wine will Dissolve not only the pure Sulphur of Concretes, but likewise the whole Substance of divers Resinous Bodies, as Benzoin, the Gummous parts of Jalap, Gumme Lacca, and Other bodies that are counted perfectly Mixt. And we see that the Extracts made either with Water or Spirit of Wine are not of a simple and Elementary Nature, but Masses consisting of the looser Corpuscles, and finer parts of the Concretes whence they are Drawn; since by Distillation they may be Divided into more Elementary substances,

Next, we may consider That even when there intervenes a Chymical resolution by the Fire, 'tis seldom in the Saline or Sulphureous principle, as such that the desir'd Faculty of the Concrete Resides; But, as that Titular Salt or Sulphur is yet a mixt Body, though the Saline or Sulphureous Nature be predominant in it. For, if in Chymical Resolutions the separated Substances were pure and simple Bodies, and of a perfect Elementary Nature; no one would be indued with more Specifick Vertues than another; and their qualities would Differ as Little as do those of Water. And let me add this upon the by, That even Eminent Chymists have suffer'd themselves to be reprehended by me for their over great Diligence in purifying some of the things they obtain by Fire from mixt Bodies. For though such compleatly purifyed Ingredients of Bodies might perhaps be more satisfactory to our Understanding; yet others are often more useful to our Lives; the efficacy of such Chymical Productions depending most upon what they retain of the Bodies whence they are separated, or gain by the new associations of the Dissipate

pated among themselves; whereas they were meerly Elementary, their ses would be comparatively very small; nd the vertues of Sulphurs, Salts, or ther such Substances of one denomina-on, would be the very same.

And by the Way (*Eleutherius*) I am iclin'd upon this ground to Think, That ie artificial resolution of compound odies by Fire does not so much en-ich mankind, as it divides them into heir supposed Principles; as upon the core of its making new compounds by ew combinations of the dissipated parts f the resolv'd Body. For by this means he Number of mixt Bodies is conside-ably increased; And many of those new roductions are endow'd with useful ualities; divers of which they owe not o the body from which they were ob-ain'd, but to Their newly Acquired Texture.

But thirdly, that which is principally o be Noted is this, that as there are di-vers Concretes, whose Faculties reside in some one or other of those differing Substances, that Chymists call their Sul-phurs, Salts, and Mercuries, and con-sequently may be best obtain'd, by ana-

lyzing the Concrete whereby the desir ed Principles may be had sever'd or free from the rest; So there are others where in the noblest properties lodge not i the Salt, or Sulphur, or Mercury, bu depend immediately upon the form, o (if you will) result from the determi nate structure of the Whole Concret and consequently they that go about t extract the Vertues of such Bodies, b exposing them to the Violence of th Fire, do exceedingly mistake, and tak the way to Destroy what they woul obtain.

I remember that *Helmont* himse somewhere confesses, That as the Fir betters some things and improves the Vertues, so it spoyles others and make them degenerate. And elsewhere h judiciously affirmes, that there ma be sometimes greater vertue in a simpl such as Nature has made it, than in an thing that can by the fire be separate from it. And lest you should doub whether he means by the vertues o things those that are Medical; he has i one place this ingenuous confession; Cr *do* (saies he) *simplicia in sua simplicita esse sufficientia pro sanatione omnium mor*

Helmont. Pharm. & Dispens. Nov. pag. 498.

horu

orum. Nay, Barthius, even in a comment pon *Beguinus*, ſcruples not to make this knowledgment; *Valde abſurdum eſt* aies he) *ex omnibus rebus extracta facere,* Vide Jer. ad Begu. *dia, quintas eſſentias; præſertim ex ſub-* Lib. 1. *antiis per ſe plane vel ſubtilibus vel ho-* Cap. 17. *ogeneis, quales ſunt Uniones, Corallia, Moſcus, Ambra, &c.* Conſonantly where-nto he alſo tells Us, (and Vouches the mous *Platerus*, for having candidly gi-en the ſame Advertiſement to his Au-itors,) that ſome things have greater ertues, and better ſuited to our humane ature, when unprepar'd, than when they ave paſt the Chymiſts Fire; as we ſee, aies my Author, in Pepper; of which ome grains ſwallowed perform more pwards the relief of a Diſtemperd ſto-ack, than a great quantity of the Oyle f the ſame ſpice.

It has been (purſues *Carneades*) by our riend here preſent obſerv'd concerning alt-petre, that none of the ſubſtances nto which the Fire is wont to divide it, etaines either the Taſt, the cooling ver-ue, or ſome other of the properties of he Concrete; and that each of thoſe ubſtances acquires new qualities not to e found in Salt-Petre it ſelf. The

shining property of the tayls of glow worms does survive but so short a tim the little animal made conspicuous b it, that inquisitive men have not scruple publickly to deride *Baptista Porta* an others; who, deluded perhaps with som Chymical surmises, have ventur'd to pr scribe the distillation of a Water fro the tayles of Glowwormes, as a sure wa to obtain a liquor shining in the Dar To which I shall now add no other e ample than that afforded us by Ambe which, whilst it remains an intire bod is endow'd with an Electrical faculty drawing to it self feathers, strawes, an such like Bodies; which I never coul observe either in its Salt, its Spirit, i Oyle, or in the Body I remember I on made by the reunion of its divided El ments; none of these having such a Te ture as the intire Concrete. And howev Chymists boldly deduce such and suc properties from this or that propertie of their component Principles; yet Concretes that abound with this or tha Ingredient, 'tis not alwaies so much b vertue of its presence, nor its plent that the Concrete is qualify'd to pe form such and such Effects; as upon th

accoun

count of the particular texture of that
d the other Ingredients, associated af-
r a determinate Manner into one Con-
ete: though possibly such a proportion
that ingredient may be more conveni-
t than another for the constituting of
ch a body. Thus in a clock the hand
mov'd upon the Dyal, the bell is struck,
d the other actions belonging to the
gine are perform'd, not because the
heeles are of brass or iron, or part of
e metal and part of another, or because
e weights are of Lead, but by Vertue
f the size, shape, bigness, and co-apta-
on of the several parts; which would
erforme the same things though the
heels were of Silver, or Lead, or Wood,
nd the Weights of Stone or Clay; pro-
ided the Fabrick or Contrivance of
he engine were the same: though it
e not to be deny'd, that Brass and
teel are more convenient materials to
ake clock-wheels of than Lead, or
Wood. And to let you see, *Eleutherius*,
hat 'tis sometimes at least, upon the
Texture of the small parts of a body, &
iot alwaies upon the presence, or recess,
or increase, or Decrement of any one
of its Principles, that it may loose some

such

ſuch Qualities, and acquire ſome ſuch
thers as are thought very ſtrongly inh
rent to the bodies they Reſide in;
will add to what may from my paſt d
ſcourſe be referr'd to this purpoſe, th
Notable Example, from my Own exp
rience; That Lead may without any a
ditament, and only by various applic
tions of the Fire, loſe its colour; a
acquire ſometimes a gray, ſometimes
yellowiſh, ſometimes a red, ſometimes
amethyſtine colour; and after having p
through theſe, and perhaps divers othe
again recover its leaden colour, and
made a bright Body. That alſo th
Lead, which is ſo flexible a metal, m
be made as brittle as Glaſſe, and prefe
ly be brought to be again flexible a
Malleable as before. And beſides, th
the ſame lead, which I find by *Microſc*
pes to be one of the moſt opacous bodi
in the World, may be reduced to a fi
tranſparent glaſs; whence yet it ma
return to an opacous Nature again; a
all this, as I ſaid, without the addition
any extraneous body, and meerly by th
manner and Method of expoſing it t
the Fire.

But (ſaies *Carneades*) after havin
alread

eady put you to ſo prolix a trouble, is time for me to relieve you with a omiſe of putting ſpeedily a period to And to make good that promiſe, I ſhall om all that I have hitherto diſcourſed th you, deduce but this one propoſiti- by way of Corollary. [*That it may as be doubted, whether or no there be any terminate Number of Elements*; *Or*, *if u pleaſe, whether or no all compound bo- es, do conſiſt of the ſame number of Ele- ntary ingredients or material Princi- es.*]

This being but an inference from the regoing Diſcourſe, it will not be re- iſite to inſiſt at large on the proofs of ; But only to point at the chief of hem, and Referr You for Particulars what has been already Delivered.

In the Firſt place then, from what as been ſo largely diſcours'd, it may ap- ear, that the Experiments wont to be rought, whether by the common Peri- atetick, or by the vulgar Chymiſts, to emonſtrate, that all mixt bodies are ade up preciſely either of the four E- ments, or the three Hypoſtatical Prin- ples, do not evince what they are al- dg'd to prove. And as for the other

common

common arguments, pretended to
drawn from Reason in favour of the
ristotelian Hypothesis (for the Chymi
are wont to rely almost altogether up
Experiments) they are Common
grounded upon such unreasonable
precarious Suppositions, that 'tis alt
gether as easie and as just for any man
reject them, as for those that take the
for granted to assert them, being inde
all of them as indemonstrable as t
conclusion to be inferr'd from them; a
some of them so manifestly weak a
proofless; that he must be a very cou
teous adversary, that can be willing
grant them; and as unskilful a one, th
can be compelled to do so.

In the next place, it may be consic
red, if what those Patriarchs of the *Sp*
gyrists, *Paracelsus* and *Helmont*, do on
vers occasions positively deliver, be tru
namely that the *Alkahest* does Resol
all mixt Bodies into other Principl
than the fire, it must be decided whi
of the two resolutions (that made by t
Alkahest, or that made by the fire) sha
determine the number of the Elemen
before we can be certain how ma
there are.

An

And in the mean time, we may take
tice in the laſt place, that as the di-
ſtinct ſubſtances whereinto the *Alkahest*
vides bodies, are affirm'd to be differ-
ig in nature from thoſe whereunto they
e wont to be re-
c'd by fire, and
t be obtain'd from
me bodies more
Number than
om ſome others;

Novi ſaxum & lapides omnes in merum ſalem ſuo ſaxo aut lapidi & æquiponderantem reducere abſque omni prorſus ſulphure aut Mercurio. Helmont. pag. 490.

hce he tells us, he could totally reduce
l ſorts of Stones into Salt only, where-
of a coal he had two diſtinct Liquors.
o, although we ſhould acquieſce in that
ſolution which is made by fire, we find
ot that all mixt bodies are thereby di-
ided into the ſame number of Elements
nd Principles; ſome Concretes afford-
ng more of them than others do; Nay
nd ſometimes this or that Body afford-
ng a greater number of Differing ſub-
ances by one way of management, than
he ſame yeelds by another. And they
hat out of Gold, or Mercury, or Muſco-
y-glaſs, will draw me as many diſtinct
ubſtances, as I can ſeparate from Vitri-
ol, or from the juice of Grapes variouſly
rder'd, may teach me that which I ſhall
very

very Thankfully learn. Nor does it ap-
pear more congruous to that variety that
ſo much conduceth to the perfection of
the Univerſe, that all Elemented bodies
be compounded of the ſame number of
Elements, than it would be for a lan-
guage, that all its words ſhould consist
of the ſame number of Letters.

THE

THE SCEPTICAL CHYMIST

OR,

A Paradoxical Appendix to the Foregoing Treatise.

The Sixth Part.

HEre *Carneades* having Dispach't what he Thought Requisite to oppose against what the Chymists are wont to alledge for Proof of their three Principles, Paus'd a while, and look'd about him, to discover whether it were time for him and his Friend to Reyne the Rest of the Company. But *Leutherius* perceiving nothing yet to forbid

forbid Them to Profecute their Di
courſe a little further, ſaid to his Frien
(who had likewiſe taken Notice
the ſame thing) I halfe expected, *Ca*
neades, that after you had ſo freely d
clar'd Your doubting, whether there
any Determinate Number of Element
You would have proceeded to queſtio
whether there be any Elements at a
And I confeſs it will be a trouble to m
if You defeat me of my Expectatio
eſpecially ſince you ſee the leaſure
have allow'd us may probably ſuffice
examine that Paradox; becauſe yo
have ſo largely Deduc'd already ma
Things pertinent to it, that you nee
but intimate how you would have the
Apply'd, and what you would infe
from them.

Carneades having in Vain repreſente
that their leaſure could be but ve
ſhort, that he had already prated ve
long, that he was unprepar'd to mai
tain ſo great and ſo invidious a Par
dox, was at length prevail'd with
tell his Friend; Since, *Eleutherius*, yo
will have me Diſcourſe *Ex Tempore*
the Paradox you mention, I am conten
(though more perhaps to expreſs m

Obed

bedience, than my Opinion) to tell ou that (ſuppoſing the Truth of *Hel-onts* and *Paracelſus*'s Alkaheſtical Ex-eriments, if I may ſo call them) though may ſeem extravagant, yet it is not ſurd to doubt; whether, for ought is been prov'd, there be a neceſſity to mit any Elements, or Hypoſtatical rinciples, at all.

And, as formerly, ſo now, to avoid e needleſs trouble of Diſputing ſeve-lly with the *Ariſtotelians* and the Chy-iſts, I will addreſs my ſelf to oppoſe em I have laſt nam'd, Becauſe their octrine about the Elements is more plauded by the Moderns, as pretend-g highly to be grounded upon Expe-ience. And, to deal not only fairly ut favourably with them, I will allow em to take in Earth and Water to eir other Principles. Which I con-nt to the rather, that my Diſcourſe ay the better reach the Tenents of the eripateticks; who cannot plead for ny ſo probably as for thoſe two Ele-nents; that of fire above the Air be-ng Generally by Judicious Men explo-ed as an Imaginary thing; And the Air not concurring to compoſe Mixt

Bodies as one of their Elements, bu
only lodging in their pores, or rathe
repleniſhing, by reaſon of its Weigh
and Fluidity, all thoſe Cavities of bo
dies here below, whether compounde
or not, that are big enough to adm
it, and are not fill'd up with any groſſ
ſubſtance.

And, to prevent miſtakes, I muſt a
vertize You, that I now mean by El
ments, as thoſe Chymiſts that ſpe
plaineſt do by their Principles, certa
Primitive and Simple, or perfectly u
mingled bodies; which not being ma
of any other bodies, or of one an
ther, are the Ingredients of which a
thoſe call'd perfectly mixt Bodies a
immediately compounded, and in
which they are ultimately reſolved: no
whether there be any one ſuch body
be conſtantly met with in all, and eac
of thoſe that are ſaid to be Element
bodies, is the thing I now queſtion.

By this State of the controverſie yo
will, I ſuppoſe, Gueſs, that I need no
be ſo abſurd, as to deny that there a
ſuch bodies as Earth, and Water, an
Quickſilver, and Sulphur: But I look u
on Earth and Water, as component par

of the Universe, or rather of the Terestrial Globe, not of all mixt bodies. And though I will not peremptorily deny that there may sometimes either a running Mercury, or a Combustible Substance be obtain'd from a Mineral, or even a Metal; yet I need not Concede either of them to be an Element in the sence above declar'd; as I shall have occasion to shew you by and by.

To give you then a brief account of the grounds I intend to proceed upon, I must tell you, that in matters of Philosophy, this seems to me a sufficient reason to doubt of a known and important proposition, that the Truth of it is not yet by any competent proof made to appear. And congruously hereunto, if I shew that the grounds, upon which men are perswaded that there are Elements, are unable to satisfie a considering man, I suppose my doubts will appear rational.

Now the Considerations that induce men to think, that there are Elements, may be conveniently enough referr'd to two heads. Namely, the one, that it is necessary that Nature make use of Elements to constitute the bodies that

are reputed Mixt. And the other, Tha
the Resolution of such bodies manifest
that nature had compounded them o
Elementary ones.

In reference to the former of the
Considerations, there are two or thr
things that I have to Represent.

And I will begin with reminding you
the Experiments I not long since relat
to you concerning the growth of pom
ons, mint, and other vegetables out
fair water. For by those experiments
seems evident, that Water may be Tra
muted into all the other Elements; fro
whence it may be inferr'd, both, Th
'tis not every Thing Chymists will c
Salt, Sulphur, or Spirit, that needs
waies be a Primordiate and Ingenerale
body. And, that Nature may conte a
Plant (though that be a perfectly m t
Concrete) without having all the E-
ments previously presented to her o
compound it of. And, if you will allow e
relation I mention'd out of *Mounsier
De Rochas* to be True; then may not o
ly plants, but Animals and Minerals t
be produced out of Water. And how-
ver there is little doubt to be made, b t
that the plants my tryals afforded m
s

s they were like in ſo many other re-
ſects to the reſt of the plants of the
ſame Denomination; ſo they would, in
case I had reduc'd them to putrefaction,
have likewiſe produc'd Wormes or other
insects, as well as the reſembling Vege-
tables are wont to do; ſo that Water
may, by Various Seminal Principles,
be ſucceſſively Tranſmuted into both
plants and Animals. And if we conſi-
der that not only Men, but even ſuck-
ing Children are, but too often, Tor-
mented with Solid Stones; and that di-
vers ſorts of Beaſts themſelves, (whate-
ver *Helmont* againſt Experience think to
the contrary) may be Troubled with
great and Heavy ſtones in their Kid-
neys and Bladders, though they Feed
but upon Graſs and other Vegetables,
that are perhaps but Diſguiſed Water,
it will not ſeem improbable that even
ſome Concretes of a mineral Nature,
may Likewiſe be form'd of Water.

We may further take notice, that
as a Plant may be nouriſht, and con-
ſequently may Conſiſt of Common wa-
ter; ſo may both plants and Animals,
(perhaps even from their Seminal Ru-
diments) conſiſt of compound Bodies,

without having any thing meerly Ele
mentary brought them by nature to b
compounded by them: This is evident i
divers men, who whilst they were Infan
were fed only with Milk, afterwar
Live altogether upon Flesh, Fish, Win
and other perfectly Mixt Bodies.
may be seen also in sheep, who on son
of our English Downs or Plains, gro
very fat by feeding upon the grass, wit
out scarce drinking at all. And y
more manifestly in the magots th
breed and grow up to their full bigne
within the pulps of Apples, Pears, or t
like Fruit. We see also, that Dungs th
abound with a mixt Salt give a mu
more speedy increment to Corn and
ther Vegetables, than Water alo
would do: And it hath been assur'd n,
by a man experienc'd in such matter,
that sometimes when to bring up roc
very early, the Mould they were pla
ed in was made over-rich, the very s
stance of the Plant has tasted of t
Dung. And let us also consider a Gr
of one kind of Fruit upon the upp
bough of a Tree of another kind.
(for instance) the Scion of a Pear upo
White-thorne; for there the ascendi
Liqu

liquor is already alter'd, either by the
ot, or in its ascent by the bark, or both
ayes, and becomes a new mixt body:
s may appear by the differing qualities
t be met with in the saps of several
ees; as particularly, the medicinal ver-
te of the Birch-Water, which I have
metimes drunk upon *Helmonts* great
d not undeserved commendation.
low the graft, being fasten'd to the stock,
ust necessarily nourish its self, and pro-
ce its Fruit, only out of this com-
pund Juice prepared for it by the stock,
ing unable to come at any other ali-
ent. And if we consider, how much of
te Vegetable he feeds upon may (as we
oted above) remain in an Animal; we
ay easily suppose, That the blood of
t at Animal who Feeds upon this, though
i be a Well constituted Liquor, and
ve all the differing Corpuscles, that
ake it up, kept in order by one presiding
rm, may be a strangly Decompounded
ody, many of its parts being themselves
lecompounded. So little is it Necessary
at even in the mixtures which nature
er self makes in Animal and Vegetable
odies, she should have pure Elements
: hand to make her compositions of.

Having ſaid thus much touching th
conſtitution of Plants and Animals,
might perhaps be able to ſay as muc
touching that of Minerals, and even Me
tals, if it were as eaſy for us to make ex
periment in Order to the production o
theſe, as of thoſe. But the growth o
increment of Minerals being uſually
work of exceſſively long time, and fo
the moſt part perform'd in the bowe
of the Earth, where we cannot ſee it,
muſt inſtead of Experiments make uſe
on this occaſion, of Obſervations.

That ſtones were not all made at onc
but that ſome of them are now adaye
generated, may (though it be deny'd b
ſome) be fully prov'd by ſeveral exam
ples, of which I ſhall now ſcarce alled
any other, than that famous place i
France known by the name of *Les Cav*
Goutieres, where the Water falling fro
the upper Parts of the cave to the groun
does preſently there condenſe into litt
ſtones, of ſuch figures as the drops, fa
ling either ſeverally or upon one anothe
and coagulating preſently into ſton
chance to exhibit. Of theſe ſtones ſom
Ingenious Friends of ours, that went
while ſince to viſit that place, did m
th

te favour to present me with some that tey brought thence. And I remem-ber that both that sober Relator of his oyages, *Van Linschoten*, and another ood Author, inform us that in the Dia-ond Mines (as they call them) in the *ast-Indies*, when having dig'd the arth, though to no great depth, they id Diamonds and take them quite a-ay; Yet in a very few years they find the same place new Diamonds pro-uc'd there since. From both which elations, especially the first, it seems robable that Nature does not alwaies ay for divers Elementary Bodies, when e is to produce stones. And as for letals themselves, Authors of good note ssure us, that even they were not in the eginning produc'd at once altogether, ut have been observ'd to grow; so that what was not a Mineral or Metal before, ecame one afterwards. Of this it were asie to alledg many testimonies of pro-essed Chymists. But that they may ave the greater authority, I shall rather present you with a few borrowed from more unsuspected writers. *Sulphuris Mi-neram* (as the inquisitive *P. Fallopius* notes) *quæ nutrix est caloris subterranei fabri*

fabri seu Archæi fontium & mineralium Infra terram citissimè renascitestantur Historiæ Metallicæ. Sunt enim loca è quibus si hoc anno sulphur effossum fuerit; intermissa fossione per quadriennium redeun fossores & omnia sulphure, ut antea, rursu inveniunt plena. Pliny Relates, *In Italic Insula Ilva, gigni ferri metallum.* Strabo *multo expressius; effossum ibi metallun semper regenerari. Nam si effossio spati centum annorum intermittebatur, & iterum illuc revertebantur, fossores reperis maximam copiam ferri regeneratam.* Whic history not only is countenanced by *Fallopius*, from the Incom which the Iron o that Island yeelded the Duke of *Florenc* in his time; but is mention'd more expressely to our purpose, by the Learnec *Cesalpinus. Vena* (saies he) *ferri copiosissima est in Italia; ob eam nobilitata Ilva Tyrrheni maris Insula incredibili copi etiam nostris temporibus eam gignens: Nam terra quæ eruitur, dum vena offoditur tota procedente tempore in venam convertitur.* Which last clause is therefore very notable, because from thence we may deduce, that earth, by a Metalline plastick principle latent in it, may be in processe of time chang'd into a metal. And even *Agricola*

ricola himself, though the Chymists complain of him as their adversary, acknowledges thus much and more; by telling us that at a Town called *Saga* in *Germany*, they dig up Iron in the Fields, by sinking Ditches two foot deep;

In Lygiis, ad Sagam oppidum; in pratis cruitur ferrum, fossis ad altitudinem bipedaneam actis. Id decennio renatum denuo foditur non aliter ac Ilvæ ferrum.

and adding, that within the space of ten years the Ditches are digged again for Iron since produced, As the same Metal is wont to be obtain'd in *Ilva*. Also concerning Lead, nor to mention what even *Galen* notes, that it will increase both in bulk and Weight if it be long kept in Vaults or Sellers, where the Air is gross and thick, as he collects from the swelling of those pieces of Lead that were imploy'd to fasten together the parts of old Statues. Not to mention this, I say, *Boccacius Certaldus*, as I find him Quoted by a Diligent Writer, has this Passage touching the Growth of Lead. *Fessularum mons* (saies he) *in Hetruria, Florentiæ civitati imminens, lapides plumbarios habet; qui si excidantur, brevi temporis spatio, novis incrementis instaurantur; ut* (annexes my Author) *tradit Boccacius Certaldus, qui id*

id compertissimum esse scribit. Nihil ho novi est; sed de eodem Plinius, lib. 34 Hist. Natur. cap. 17. dudum prodidit. Inquiens, mirum in his solis plumbi metal lis, quod derelicta fertilius reviviscunt In plumbariis secundo Lapide ab Amber ga dictis ad Asylum recrementa congest in cumulos, expositа solibus pluviisqu paucis annis, reddunt suum metallun cum fœnore. I might Add to these, (continues *Carneades*) many things that I have met with concerning the Generation of Gold and Silver. But for fear of wanting time, I shall mention but two or three Narratives. The First you may find Recorded by *Gerhardu* the Physick Professor, in these Words. *In valle* (saies he) *Joachimica argentum graminis modo & more è Lapidibus mine ræ velut è radice excreviſse digiti Longi tudine, testis est Dr. Schreterus, qui ejus modi venas aspectu jucundas & admirabi les Domi suæ aliis sæpe monstravit & Do navit. Item Aqua cærulea Inventa est Annebergæ, ubi argentum erat adhuc in primo ente, quæ coagulata redacta est in calcem fixi & boni argenti..*

The other two Relations I have not met with in Latine Authors, and yet they

hey are both very memorable in themelves, and pertinent to our presest urpose.

The first I meet with in the Commenary of *Johannes Valehius* upon the *Kleine Baur*, in which that industrious Chymist Relates, with many circumstances, hat at a Mine-Town (If I may so Englisn the German *Bergstat*) eight niles or Leagues distant from *Strasburg* call'd *Mariakirch*, a Workman came to he Overseer, and desired employment; but he telling him that there was not any of the best sort at present for him, added that till he could be preferr'd to some such, he might in the mean time, to avoid idleness, work in a Grove or Mine-pit thereabouts, which at that time was little esteem'd. This Workman after some weeks Labour, had by a Crack appearing in the Stone upon a Stroak given near the wall, an Invitation Given him to Work his Way through, which as soon as he had done, his Eyes were saluted by a mighty stone or Lump which stood in the middle of the Cleft (that had a hollow place behind it) upright, and in shew like an armed-man; but consisted of pure fine

Silver

Silver having no Vein or Ore by it, r
any other Additament, but ſtood the
free, having only underfoot ſomethi
like a burnt matter; and yet this o
Lump held in Weight above a 10
marks, which, according to the Dut
Account, makes 500 pound weight
fine ſilver. From which and other Ci
cumſtances my Author gathers; Th
by the warmth of the place, the Nob
Metalline Spirits, (Sulphureous a
Mercurial) were carri'd from the neig
bouring Galleries or Vaults, through
ther ſmaller Cracks and Clefts in
that Cavity, and there collected as in
cloſe Chamber or Cellar; wherein
when they were gotten, they did in pr
ceſs of time ſettle into the foremenți
ned precious maſs of Metal.

The other Germane Relation is
that great Traveller and Laborio
Chymiſt *Johannes* (not *Georgius*) *Agric*
la; who in his notes upon what *Popp*
us has written of Antimony, Relates
that when he was among the *Hungaria*
Mines in the deep Groves, he obſerv'
that there would often ariſe in them
warm Steam, (not of that malignan
ſort which the Germans call *Shwadt*
whic

which (saies he) is a meer poyson, and often suffocates the Diggers) which aften'd it self to the Walls; and that coming again to review it after a couple of dayes, he discern'd that it was all very fast, and glistering; whereupon having collected it and Distill'd it *per Retortam*, he obtain'd from it a fine Spirit: adding, that the Mine-Men inform'd him, that this Steam, or Damp (as the English Men also call it, retaining the Dutch Term) would at last have become a Metal, as Gold or Silver.

I referr (saies *Carneades*) to another Occasion, the Use that may be made of these Narratives towards the explicating the Nature of Metalls; and that of Fixtness, Malleableness, and some other Qualities conspicuous in them. And in the mean time, this I may at present deduce from these Observations; That 'tis not very probable, that, whensoever a Mineral, or even a Metal, is to be Generated in the Bowels of the Earth, Nature needs to have at hand both Salt, and Sulphur, and Mercury to Compound it of; for, not to urge that the two last Relations seem less to favour the Chymists than *Aristotle*, who would

would have Metals Generated of cē
tain *Halitus* or ſteams, the forement
on'd Obſervations together, make
ſeem more Likely that the miner
Earths or thoſe Metalline ſteams (wher
with probably ſuch Earths are plent
fully imbu'd) do contain in them ſom
ſeminal Rudiment, or ſome thing Equ
valent thereunto; by whoſe plaſtic
power the reſt of the matter, though pe
haps Terreſtrial and heavy, is in Tra
of time faſhion'd into this or That m
talline Ore; almoſt (as I formerly note
as that fair water was by the ſemin
Principle of Mint, Pompions, and oth
Vegetables, contriv'd into Bodies a
ſwerable to ſuch Seeds. And that ſuc
Alterations of Terreſtrial matter a
not impoſſible, ſeems evident from th
notable Practice of the Boylers of Sal
Petre, who unanimouſly obſerve,
well here in *England* as in other Cou
tries, That if an Earth pregnant wi
Nitre be depriv'd, by the affuſion of w
ter, of all its true and diſſoluble Salt, y
the Earth will after ſome years yee
them Salt-Petre again; For which re
ſon ſome of the eminent and skilfulle
of them keep it in heaps as a perpetu
Mi

ſine of Salt Petre; whence it may appear, that the Seminal Principle of Nitre latent in the Earth does by degrees transforme the neighbouring matter into a Nitrous Body; for though I deny that ſome Volatile Nitre may by ſuch Earths be attracted (as they ſpeak) out of the Air, yet that the innermoſt parts of ſuch great heaps that lye ſo remote from the Air ſhould borrow from it all the Nitre they abound with, is not probable, for other reaſons beſides the remoteneſs of the Air, though I have not the Leaſure to mention them.

And I remember, that a perſon of Great Credit, and well acquainted with the wayes of making Vitriol, affirm'd to me, that he had obſerv'd, that a kind of mineral which abounds in that Salt, being kept within Doors and not expos'd (as is uſual) to the free Air and Rains, did of it ſelf in no very long time turn into Vitriol, not only in the outward or ſuperficial, but even in the internal and moſt Central parts.

And I alſo remember, that I met with a certain kind of Marchaſite that lay together in great Quantities under

ground, which did, even in my cham
ber, in so few hours begin of it self t
turne into Vitriol, that we need not di
strust the newly recited narrative. Bu
to return to what I was saying of Nitre
as Nature made this Salt-Petre out c
the once almost an inodorous Earth i
was bread in and did not find a very stir
king and corrosive Acid Liquor, and
sharp Alcalizate Salt to compound it o
though these be the Bodies into whic
the Fire dissolves it; so it were not n
cessary that Nature should make up a
Metals and other Minerals of Pre-exi
stent Salt, and Sulphur, and Mercury
though such Bodies might by Fire b
obtained from it. Which one consideratı
on duly weigh'd is very considerable i
the present controversy: And to thi
agree well the Relations of our two Ger
man Chymists; for besides that it cannc
be convincingly prov'd, it is not so muc
as likely that so languid and moderate
heat as that within the Mines, shoul
carry up to so great a height, though i
the forme of fumes, Salt, Sulphur, an
Mercury; since we find in our Distillati
ons, that it requires a considerable De
gree of Fire to raise so much as to th
heigh

eight of one foot not only Salt, but ven Mercury it self, in close Vessels. nd if it be objected, that it seems by ie stink that is sometimes observ'd when ightning falls down here below, that lphureous steams may ascend very gh without any extraordinary Degree heat; It may be answer'd, among other ings, that the Sulphur of Silver is by hymists said to be a fixt Sulphur, ough not altogether so well Digested that of Gold.

But, (proceeds *Carneades*) If it had ot been to afford You some hints con-rning the Origine of Metals, I need ot have deduc'd any thing from these bservations; It not being necessary to ie Validity of my Argument that my eductions from them should be irre-agrable, because my Adversaries the *ristotelians* and Vulgar Chymists do ot, I presume, know any better than I, *priori*, of what ingredients Nature ompounds Metals and Minerals. For ieir Argument to prove that those Bo-ies are made up of such Principles, is rawn *a posteriori*; I mean from this, that pon the *Analysis* of Mineral bodies they re resolv'd into those differing substan-

ces. That we may therefore exami
this Argument, Let us proceed to con
der what can be alledg'd in behalf f
the Elements from the Resolutions f
Bodies by the fire; which you remem
was the second Topick whence I to
you the Arguments of my Adversa
were desum'd.

And that I may first dispatch wha
have to say concerning Minerals, I w
begin the remaining part of my c
course with considering how the fire
vides them.

And first, I have partly noted abo
that though Chymists pretend from so
to draw salt, from others running M
cury, and from others a Sulphur;
they have not hitherto taught us by a
way in use among them to separate
one principle, whether Salt, Sulphu
Mercury, from all sorts of Mine
without exception. And thence I may
allow'd to conclude that there is
any of the Elements that is an Ingredi
of all Bodies, since there are some
which it is not so.

In the next place, supposing that eit
Sulphur or Mercury were obtaina
from all sorts of Minerals. Yet still t

Sulph

Sulphur or Mercury would be but a compounded, not an Elementary body, as I told you already on another occasion. And certainly he that takes notice of the wonderful Operations of Quicksilver, whether it be common, or drawn from Mineral Bodies, can scarce be so inconsiderate as to think it of the very same nature with that immature and fugitive substance which in Vegetables & Animals Chymists have been pleas'd to call their Mercury. So that when Mercury is got by the help of the fire out of a Metal or other Mineral Body, if we will not suppose that it was not pre-existent in it, but produc'd by the action of the fire upon the Concrete, we may at least suppose this Quicksilver to have been a perfect Body of its own kind (though perhaps less heterogeneous than more secundary mixts) which happen'd to be mingl'd *per minima*, and coagulated with the other substances, whereof the Metal or Mineral consisted. As may be exemplyfied partly by Native Vermilion wherein the Quicksilver and Sulphur being exquisitely blended both with one another, and that other course Mineral stuff (what ever it be) that harbours them,

them, make up a red body differing
nough from both; and yet from whi
part of the Quickſilver, and of the Su
phur, may be eaſily enough obtain'd;
Partly by thoſe Mines wherein natu
has ſo curiouſly incorporated Silv
with Lead, that 'tis extreamly difficu
and yet poſſible, to ſeparate the form
out of the Latter; And partly too
native Vitriol, wherein the Metalli
Corpuſcles are by skill and induſtry
parable from the ſaline ones, though th
be ſo con-coagulated with them, th
the whole Concrete is reckon'd amo
Salts.

And here I further obſerve, that I
ver could ſee any Earth or Water, p
perly ſo call'd, ſeparated from eith
Gold or Silver (to name now no oth
Metalline Bodies) and therefore to
tort the argument upon my Adverſari
I may conclude, that ſince there
ſome bodies in which, for ought
pears, there is neither Earth nor Wat
I may be allow'd to conclude, that ni
ther of thoſe two is an Univerſal
gredient of all thoſe Bodies that
counted perfectly mixt, which I de
you would remember againſt Anon.

It may indeed be objected, that the ason why from Gold or Silver we can- ot ſeparate any moiſture, is, becauſe at when it is melted out of the Oar, e vehement Fire requiſite to its Fuſion rc'd away all the aqueous and fugitive oiſture; and the like fire may do from e materials of Glaſs. To which I all Anſwer, that I Remember I ad not long ſince in the Learned *ſephus Acoſta*, who relates it upon his vn obſervation; that in *America* here he long lived) there is a kind of lver which the *Indians* call *Papas*, and metimes (ſaies he) they find pieces ry fine and pure like to ſmall round ots, the which is rare in that metal, t uſual in Gold; Concerning which etal he tells us, that beſides this they nd ſome which they call Gold in grains, hich he tells us are ſmall morſells of old that they find whole without mix- re of any other metal, which hath no eed of melting or Refining in the re.

Acoſta Natural and Moral hiſtory of the Indies, L. 3. c. 5. p. 212.

I remember that a very skilful and redible perſon affirmed to me, that be- g in the *Hungarian* mines he had the ood fortune to ſee a mineral that was

there digg'd up, wherein pieces of Go
of the length, and alſo almoſt of th
bigneſs of a humane Finger, grew
the Oar, as if they had been parts a
Branches of Trees.

And I have my ſelf ſeen a Lump
whitiſh Mineral, that was brought
a Rarity to a Great and knowing Prin
wherein there grew here and there
the Stone, which looked like a kind
ſparr, divers little Lumps of fine Go
(for ſuch I was aſſured that Tryal h
manifeſted it to be) ſome of th
Seeming to be about the Bigneſs
peaſe.

But that is nothing to what our
coſta ſubjoynes, which is indeed ve
memorable, namely, that of the m
ſels of Native and pure Gold, which
lately heard him mentioning, he h
now and then ſeen ſome that weigh
many pounds; to which I ſhall ad

See *Acoſta* in the fore-citedPlace, and the paſſage of *Pliny* quoted by him.

that I my ſelf have ſeen a Lump
Oar not long ſince digged up, in wh
ſtony part there grew, almoſt li
Trees, divers parcels though not
Gold, yet of (what perhaps Minerali
will more wonder at) another Me
which ſeemed to be very pure or
mi

nixt with any Hererogeneous Subſtan-ces, and were ſome of them as big as ny Finger, if not bigger. But upon Obſervations of this kind, though per-haps I could, yet I muſt not at preſent, dwell any longer.

To proceed Therefore now (ſaies *Carneades*) to the Conſideration of the *Analyſis* of Vegetables, although my Tryals give me no cauſe to doubt but that out of moſt of them five differing Subſtances may be obtain'd by the fire, yet I think it will not be ſo eaſily Demonſtrated that theſe deſerve to be call'd Elements in the Notion above explain'd.

And before I deſcend to particulars, I ſhall repeat and premiſe this General Conſideration, that theſe differing ſubſtances that are call'd Elements or Principles, differ not from each other as Metals, Plants and Animals, or as ſuch Creatures as are immediately produc'd each by its peculiar Seed, and Conſtitutes a diſtinct propagable ſort of Creatures in the Univerſe; but theſe are only Various Schemes of matter or Subſtances that differ from each other, but in conſiſtence (as Running Mercury and

the

the same Metal congeal'd by the Vapor of Lead) and some very few other accidents, as Tast, or Smel, or Inflamability, or the want of them. So that by a change of Texture not impossible to be wrought by the Fire and other Agents that have the Faculty, not only to dissociate the small parts of Bodies, but afterwards to connect them after a new manner, the same parcel of matter may acquire or lose such accidents as may suffice to Denominate it Salt, or Sulphur, or Earth. If I were fully to clear to you my apprehensions concerning this matter, I should perhaps be obliged to acquaint you with divers of the Conjectures (for I must yet call them no more) I have had Concerning the Principles of things purely Corporeal: For though because I seem not satisfi'd with the Vulgar Doctrines, either of the Peripatetick or Paracelsian Schooles, many of those that know me, (and perhaps, among Them, *Eleutherius* himself) have thought me wedded to the Epicurean *Hypotheſis*, (as others have mistaken me for an *Helmontian*) yet if you knew how little Conversant I have been with *Epicurean* Authors,

Authors, and how great a part of *Lucretius* himself I never yet had the Curiosity to read, you would perchance be of another mind; especially if I were to entertain you at large, I say not, with my present Notions; but w^th my former thoughts concerning the Principles of things. But, as I said above, fully to clear my Apprehensions would require a Longer Discourse than we can now have.

For, I should tell you that I have sometimes thought it not unfit, that to the Principles which may be assign'd to things, as the World is now Constituted, we should, if we consider the Great Mass of matter as it was whilst the Universe was in making, add another, which may Conveniently enough be call'd an Architectonick Principle or power; by which I mean those Various Determinations, and that Skilfull Guidance of the motions of the small parts of the Universal matter by the most wise Author of things, which were necessary at the beginning to turn that confus'd *Chaos* into this Orderly and beautiful World; and Especially, to contrive the Bodies of Animals

nimals and Plants, and the Seeds of those things whose kinds were to be propagated. For I confess I cannot well Conceive, how from matter, Barely put into Motion, and then left to it self, there could Emerge such Curious Fabricks as the Bodies of men and perfect Animals, and such yet more admirably Contriv'd parcels of matter, as the seeds of living Creatures.

I should likewise tell you upon what grounds, and in what sence, I suspected the Principles of the World, as it now is, to be Three, *Matter*, *Motion* and *Rest*. I say, *as the World now is*, because the present Fabrick of the Universe, and especially the seeds of things, together with the establisht Course of Nature, is a Requisite or Condition, upon whose account divers things may be made out by our three Principles, which otherwise would be very hard, if possible, to explicate.

I should moreover declare in general (for I pretend not to be able to do it otherwise) not only why *I* Conceive that Colours, Odors, Tasts, Fluidness and Solidity, and those other qualities that Diversifie and Denominate Bodies

may

may Intelligibly be Deduced from these three; *but how two of the three* Epicurean Principles (which, I need not tell you, are Magnitude, Figure, and Weight) are Themselves Deducible from Matter and Motion; since the Latter of these Variously Agitating, and, as it were, Distracting the Former, must needs disjoyne its parts; which being Actually separated must Each of them necessarily both be of some Size, and obtain some shape or other. Nor did I add to our Principles the *Aristotelian Privation*, partly for other Reasons, which I must not now stay to insist on; and partly because it seems to be rather an Antecedent, or a *Terminus à quo*, than a True Principle, as the starting-Post is none of the Horses Legs or Limbs.

I should also explain why and how I made Rest, to be, though not so considerable a Principle of things, as Motion; yet a Principle of them; partly because it is (for ought we know) as Ancient at least as it, and depends not upon Motion, nor any other quality of matter; and partly, because it may enable the Body in which it happens to be, both

both to continue in a State of Reſt til ſome external force put it out of that ſtate, and to concur to the production of divers Changes in the bodies that hit againſt it, by either quite ſtopping or leſsning their Motion (whilſt the body formerly at Reſt Receives all or part of it into it ſelf) or elſe by giving a new Byaſs, or ſome other Modification, to Motion, that is, To the Grand and Primary inſtrument whereby Nature produces all the Changes and other Qualities that are to be met with in the World.

I ſhould likewiſe, after all this explain to you how, although Matter, Motion and Reſt, ſeem'd to me to be the Catholick Principles of the Univerſe, I thought the Principles of Particular bodies might be Commodiouſly enough reduc'd to two, namely *Matter*, and (what Comprehends the two other, and their effects) the reſult, or Aggregate, or Complex of thoſe Accidents, which are the Motion or Reſt, (for in ſome Bodies both are not to be found) the Bigneſs, Figure, Texture, and the thence reſulting Qualities of the ſmall parts, which are neceſſary to intitle the Body where-

to

) they belong to this or that Peculiar enomination; and discriminating it om others to appropriate it to a Determinate Kind of Things, (as Yellowess, Fixtness, such a Degree of Weight, nd of Ductility, do make the Portion f matter wherein they Concur, to be ckon'd among perfect metals, and obin the name of Gold) This Aggreate or result of Accidents you may if ou please, call either *Structure*, or exture, (Though indeed, that do ot so properly Comprehend the moion of the constituent parts especilly in case some of them be Fluid) r what other appellation shall appear ost Expressive. Or if, retaining the ulgar Terme, You will call it the *orme* of the thing it denominates, I all not much oppose it; Provided he word be interpreted to mean ut what I have express'd, and not a cholastick *Substantial Forme*, which so nany intelligent men profess to be to hem altogether Un-intelligible.

But, (saies *Carneades*) if you remember that 'tis a Sceptick speaks to you, nd that 'tis not so much my present Talk to make assertions as to suggest

doubts

doubts, I hope you will look upo
what I have propos'd, rather as a Nar
rative of my former conjectures touch
ing the Principles of things, than as
Resolute Declaration of my present o
pinions of them; especially since a
though they cannot but appear Ver
much to their Disadvantage, if you Cor
sider Them as they are propos'd with
out those Reasons and Explanatior
by which I could perhaps make the
appear much less extravagant; yet
want time to offer you what may be a
ledg'd to clear and countenance the
notions; my design in mentioning the
unto you at present being, partly, t
bring some Light and Confirmation t
divers passages of my discourse to yo
partly to shew you, that I do not (as yc
seem to have suspected) embrace all *E*
picurus his principles; but Dissent fro
him in some main things, as well as fro
Aristotle and the Chymists, in others; ar
partly also, or rather chiefly, to intima
to you the grounds upon which I lik
wise differ from *Helmont* in this, th
whereas he ascribes almost all thing
and even diseases themselves, to their d
terminate Seeds; I am of opinion, th
besid

esides the peculiar Fabricks of the Bo-
ies of Plants and Animals (and per-
aps also of some Metals and Minerals)
hich I take to be Effects of seminal
rinciples, there are many other bodies
nature which have and deserve di-
inct and Proper names, but yet do but
sult from such contextures of the
atter they are made of, as may with-
ut determinate seeds be effected by
eat, cold, artificial mixtures and com-
ositions, and divers other causes which
metimes nature imployes of her own
ccord; and oftentimes man by his po-
er and skill makes use of to fashion
ne matter according to his intentions.
This may be exemplified both in the
roductions of Nature, and in those of
rt; of the first sort I might name mul-
itudes; but to shew how slight a varia-
ion of Textures without addition of
ew ingredients may procure a parcel
f matter divers names, and make it be
ookt upon as Different Things;

I shall invite you to observe with me,
That Clouds, Rain, Hail, Snow, Frost,
nd Ice, may be but water, having its
parts varyed as to their size and distance
in respect of each other, and as to motion

and reſt. And among Artificial Produ ctions we may take notice (to skip th Chryſtals of Tartar)of Glaſs, Regulu Martis Stellatus, and particularly of th Sugar of Lead, which though made c that inſipid Metal and ſowre Salt of Vi negar,has in it a ſweetneſs ſurpaſſing tha of common Sugar,and divers other qua lities,which being not to be found in e ther of its two ingredients,muſt be con feſs'd to belong to the Concrete it fel upon the account of its Texture.

This Conſideration premis'd, it wi be, I hope, the more eaſie to perſwad you that the Fire may as well produc ſome new textures in a parcel of matte as deſtroy the old.

Wherefore hoping that you have no forgot the Arguments formerly imploy' againſt the Doctrine of the *Tria Prima* namely that the Salt, Sulphur,and Mer cury,into which the Fire ſeems to reſolv Vegetable and Animal Bodies, are ye compounded, not ſimple and Elementa ry Subſtances; And that (as appear'd b the Experiment of Pompions) the *Tri prima* may be made out of Water ; ho ping I ſay,that you remember Theſe an the other Things that I formerly repre

ſente

ented to the same purpose, I shall now dd only, that if we doubt not the Truth f some of *Helmonts* Relations, We may ell doubt whether any of these Hetero-eneities be (I say not pre-existent, so s to convene together, when a plant or nimal is to be constituted, but) so much s in-existent in the Concrete whence ey are obtain'd, when the Chymist rst goes about to resolve it; For, not to sist upon the un-inflamable Spirit of ch Concretes, because that may be pre-nded to be but a mixture of Phlegme nd Salt; the Oyle or Sulphur of Vegeta-les or Animals is, according to him, re-ucible by the help of Lixiviate Salts to Sope; as that Sope is by the help of epeated Distillations from a *Caput Mor-uum* of Chalk into insipid Water. And s for the saline substance at seems separable from ixt bodies; the same *Helmonts* tryals give us ause to think, That it ay be a production of he Fire which by trans-orting and otherwise altering the par-icles of the matter, does bring it to a aline nature.

Omne autem Alcali addita pinguedine in aqueum liquorem, qui tandem mera & simplex aqua fit, reducitur, (ut videre est in Sapone, Lazurio lapide, &c.) quoties per adjuncta fixa semen Pinguedinis deponit. Helmont.

For I know (saies he, in the pla
formerly alledg'd to another purpose
way to reduce all stones into a meer Sa
of equal weight with the stone when
it was produc'd, and that without any
the least either Sulphur or Mercur
which asseveration of my Author woul
perhaps seem less incredible to You, i
durst acquaint You with all I could
upon that subject. And hence by t
way you may also conclude that the S
phur and Mercury, as they call the
that Chymists are wont to obtain fr
compound Bodies by the Fire, m
possibly in many Cases be the produc
ons of it; since if the same bodies h
been wrought upon by the Agents e
ploy'd by *Helmont*, they would hae
yeelded neither Sulphur nor Mercury
those portions of them, which the Fi
would have presented Us in the form
of Sulphureous and Mercurial Bodi
would have, by *Helmonts* method, be
exhibited to us in the form of Salt.

But though (saies *Eleutherius*) Y
have alledg'd very plausible Argumen
against the *tria Prima*, yet I see not ho
it will be possible for you to avoid a
knowledging that Earth and Water a

El

lementary Ingredients, though not f Mineral Concretes, yet of all Ani- al and Vegetable Bodies; Since if any theſe of what ſort ſoever be commit- d to Diſtillation, there is regularly and nſtantly ſeparated from it a phlegme aqueous part, and a *Caput Mortuum* Earth.

I readily acknowledge (anſwers *rneades*) it is not ſo eaſy to reject Wa- r and Earth (and eſpecially the former) 'tis to reject the *Tria Prima*, from be- g the Elements of mixt Bodies; but is not every difficult thing that is im- ſſible.

I conſider then, as to Water, that the ief Qualities which make men give at name to any viſible Subſtance, are at it is Fluid or Liquid, and that it is ſipid and inodorous. Now as for the ſt of theſe qualities, I think you have ever ſeen any of thoſe ſeparated ſub- ances that the Chymiſts call Phlegme hich was perfectly devoid both of aſt and Smell: and if you object, that et it may be reaſonably ſuppos'd, that nce the whole Body is Liquid, the maſs nothing but Elementary Water faint- y imbu'd with ſome of the Saline or

Sulphureous parts of the ſame Concrete, which it retain'd with it upon ſ
Separation from the Other Ingredien
To this I anſwer, That this Objecti
would not appear ſo ſtrong as it is pl
ſible, if Chymiſts underſtood the N
ture of Fluidity and Compactneſs; a
that, as I formerly obſerv'd, to a Bod
being Fluid there is nothing neceſſa
but that it be divided into parts ſm
enough; and that theſe parts be put in
ſuch a motion among themſelves as
glide ſome this way and ſome that w
along each others Surfaces. So that
though a Concrete were never ſo d
and had not any Water or other Liq
in-exiſtent in it, yet ſuch a Comminut
of its parts may be made, by the fire
other Agents, as to turn a great port
of them into Liquor. Of this Truth I
give an inſtance, employ'd by our fri
here preſent as one of the moſt con
cive of his experiments to Illuſtrate
nature of Salts. If you Take then ſea ſ
and melt it in the Fire to free it from
aqueous parts, and afterwards diſtil i
with a vehement Fire from burnt Cl
or any other, as dry a *Caput Mortuum*
you pleaſe, you will, as Chymiſts conſ

by teaching it, drive over a good part of the Salt in the form of a Liquor. And to satisfy some ingenious men, That a great part of this Liquor was still true sea salt brought by the Operation of the fire into Corpuscles so small, and perhaps so advantageously shap'd, as to be capable of the forme of a Fluid Body, he did in my presence poure to such spiritual salts a due proportion of the spirit (or salt and Phlegme) of Urine, whereby having evaporated the superfluous moisture, he soon obtain'd such another Concrete, both as to taste and smell, and easie sublimableness as common Salt *Armoniack*, which you know is made up of gross and undistill'd sea salt united with the salts of Urine and of soot, which two are very neer of kin to each other. And further, to manifest that the Corpuscles of sea salt and the Saline parts of Urine retain their several Natures in this Concrete, He mixt it with a convenient quantity of Salt of Tartar, and committing it to Distillation soon obtain'd his spirit of Urine in a liquid form by its self, the sea salt staying behind with the Salt of Tartar. Wherefore it is very possible that dry Bodies may by

the Fire be reduc'd to Liquors withou
any ſeparation of Elements, but barel
by a certain kind of Diſſipation an
Comminution of the matter, whereby it
parts are brought into a new ſtate. An
if it be ſtill objected, that the Phlegm
of mixt Bodies muſt be reputed wate
becauſe ſo weak a taſt needs but a ver
ſmall proportion of Salt to impart it; I
may be reply'd, that for ought appear
common Salt and divers other bodies
though they be diſtill'd never ſo dry
and in never ſo cloſe Veſſels, will yeel
each of them pretty ſtore of a Liquo
wherein though (as I lately noted) Sa
line Corpuſcles abound, Yet there is be
ſides a large proportion of Phlegme, a
may eaſily be diſcovered by coagulatin
the Saline Corpuſcles with any conven
ent Body; as I lately told you, our Frien
coagulated part of the Spirit of Salt wit
Spirit of Urine: and as I have dive
times ſeparated a ſalt from Oyle of V
triol it ſelf (though a very ponderou
Liquor and drawn from a ſaline body
by boyling it with a juſt quantity o
Mercury, and then waſhing the newl
coagulated ſalt from the Precipitate wit
fair Water. Now to what can we mor
probabl

probably ascribe this plenty of aqueous Substance afforded us by the Distillation of such bodies, than unto this, That among the various operations of the Fire upon the matter of a Concrete divers particles of that matter are reduc'd to such a shape and bigness, as is requisite to compose such a Liquor as Chymists are wont to call Phlegme or Water. How I conjecture this change may be effected, 'tis neither necessary for me to tell you, nor possible to do so without a much longer discourse than were now seasonable. But I desire you would with me reflect upon what I formerly told you concerning the change of Quicksilver into Water; For that water having but a very faint taste, if any whit more than divers of those liquors that Chymists referr to Phlegme, By that experiment it seems evident, that even a metalline body, and therefore much more such as are but Vegetable or Animal, may by a simple operation of the Fire be turn'd in great part into Water. And since those I dispute with are not yet able out of Gold, or Silver, or divers other Concretes to separate any thing like Water; I hope I may be allow'd to conclude against Them,

Them, that water it self is not an Universal and pre-existent Ingredient of Mixt Bodies.

But as for those Chymists that, Supposing with me the Truth of what *Helmont* relates of the *Alkahest*'s wonderful Effects, have a right to press me with his Authority concerning them, and to alledge that he could Transmute all reputed mixt Bodies into insipid and meer Water; To those I shall represent, That though his affirmations conclude strongly against the Vulgar Chymists (against whom I have not therefore scrupl'd to Employ Them) since they Evince that the Commonly reputed Principles or ingredients of Things are not Permanent and indestructible, since they may be further reduc'd into Insipid Phlegme differing frō them all; Yet till we can be allow'd to examine this Liquor, I think it not unreasonable to doubt whether it be not something else than meer Water. For I find not any other reason given by *Helmont* of his Pronouncing it so, than that it is insipid. Now Sapour being an Accident or an Affection of matter that relates to our Tongue, Palate, and other Organs of Tast, it may very possibly be,

that

that the ſmall Parts of a Body may be of ſuch a Size and Shape, as either by their extream littleneſs, or by their ſlenderneſs, or by their Figure, to be unable to pierce into and make perceptible Impreſſion upon the Nerves or Membranous parts of the Organs of Taſt, and yet may be fit to work otherwiſe upon divers other Bodies than meer Water can, and conſequently to Diſcloſe it ſelf to be of a Nature farr enough from Elementary. In Silke dyed Red or of any other Colour, whilſt many Contiguous Threads make up a skein, the Colour of the Silke is conſpicuous; but if only a very few of them be look't upon, the Colour will appear much fainter than before. But if You take out one ſimple Thread, you ſhall not eaſily be able to diſcern any Colour at all; So ſubtile an Object having not the Force to make upon the Optick Nerve an Impreſſion great enough to be taken Notice of. It is alſo obſerv'd, that the beſt ſort of Oyl-Olive is almoſt taſtleſs, and yet I need not tell you how exceedingly diſtant in Nature Oyle is from Water. The Liquor into which I told you, upon the Relation of *Lully*

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an Eye-witneſs, that Mercury might be Tranſmuted, has ſometimes but a very Languid, if any Taſt; and yet its Operations even upon ſome Mineral Bodies are very peculiar. Quickſilver it ſelf alſo, though the Corpuſcles it conſiſts of be ſo very ſmall, as to get into the Pores of that Cloſeſt and compacteſt of Bodies, Gold, is yet (you know) altogether Taſtleſs. And our *Helmont* ſeveral times tells us, that fair Water, wherein a little Quantity of Quickſilver has lain for ſome time, though it acquire no certain Taſt or other ſenſible Quality from the Quickſilver; Yet it has a power to deſtroy wormes in human Bodies; which he does much, but not cauſeleſsly extoll. And I remember, a great Lady, that had been Eminent for her Beauty in Divers Courts, confeſs'd to me, that this inſipid Liquor was of all innocent waſhes for the Face the beſt that ſhe ever met with.

And here let me conclude my Diſcourſe, concerning ſuch waters or Liquors as I have hitherto been examining, with theſe two Conſiderations. Whereof the firſt is, That by reaſon of our being wont to drink nothing but Wine,

Wine, Bear, Cider, or other ſtrongly taſted Liquors, there may be in ſeveral of thoſe Liquors, that are wont to paſs for inſipid Phlegme, very peculiar and Diſtinct Taſts, though unheeded (and perhaps not to be perceiv'd) by Us. For to omit what Naturaliſts affirm of Apes, (and which probably may be true of divers other Animals) that they have a more exquiſite palate than Men: among Men themſelves, thoſe that are wont to drink nothing but water, may (as I have try'd in my ſelf) Diſcern very ſenſibly a great Difference of Taſts in ſeveral waters, which one unaccuſtomed to drink water would take to be all alike inſipid. And this is the *firſt* of my two Conſiderations. The Other is, That it is not impoſſible that the Corpuſcles, into which a body is diſſipated by the Fire, may by the Operation of the ſame fire have their figures ſo altered, or may be by aſſociations with one another brought into little Maſſes of ſuch a Size and Shape, as not to be fit to make ſenſible Impreſſions on the Tongue. And that you may not think ſuch alterations impoſſible, be pleaſed to conſider with me, that not only

only the ſharpeſt Spirit of Vinegar having diſſolved as much Corall as it can, will Coagulate with it into a Subſtance, which, though ſoluble in water like ſalt, is incomparably leſs ſtrongly Taſted than the Vinegar was before; but (what is more conſiderable) though the Acid ſalts that are carried up with Quickſilver in the preparation of common ſublimate are ſo ſharp, that being moiſtened with water it will Corrode ſome of the Metals themſelves; yet this Corroſive Sublimate being twice or thrice re-ſublim'd with a full proportion of inſipid Quickſilver, Conſtitutes (as you know) that Factitious Concrete which the Chymiſts call *Mercurius dulcis*; not becauſe it is ſweet, but becauſe the ſharpneſs of the Corroſive Salts is ſo taken away by their Combination with the Mercurial Corpuſcles, that the whole mixture when it is prepar'd is judg'd to be inſipid.

And thus (continues *Carneades*) having given you ſome Reaſons why I refuſe to admit Elementary water for a conſtant Ingredient of Mixt Bodies, it will be eaſie for me to give you an Account why I alſo reject Earth.

For

For first, it may well be suspected that many Substances pass among Chymists under the name of Earth, because, like it, they are Dry, and Heavy, and Fixt, which yet are very farr from an Elementary Nature. This you will not think improbable, If you recall to mind what I formerly told you concerning what Chymists call the Dead Earth of things, and especially touching the copper to be drawn from the *Caput Mortuum* of Vitriol; And if also you allow me to subjoyne a casual but memorable Experiment made by *Johannes Agricola* upon the *Terra Damnata* of Brimstone. Our Author then tells us (in his notes upon *Popius*) that in the year 1621 he made an Oyle of Sulphur; the remaining *Fæces* he reverberated in a moderate Fire fourteen dayes; afterwards he put them well luted up in a Wind Oven, and gave them a strong Fire for six hours, purposing to calcine the *Fæces* to a perfect Whiteness, that he might make something else out of them. But coming to break the pot, he found above but very little *Fæces*, and those Grey and not White; but beneath there lay a fine Red *Regulus* which

which he firſt marvell'd at and knew not what to make of, being well aſſured that not the leaſt thing, beſides the *Fæces* of the Sulphur, came into the pot; and that the Sulphur it ſelf had only been diſſolv'd in Linſeed Oyle; this *Regulus* he found heavy and malleable almoſt as Lead; having caus'd a Goldſmith to draw him a Wire of it, he found it to be of the Faireſt copper, and ſo rightly colour'd, that a Jew of *Prague* offer'd him a great price for it. And of this Metal he ſaies he had 12 *loth* (or ſix ounces) out of one pound of Aſhes or *Fæces*. And this ſtory may well incline us to ſuſpect that ſince the *Caput Mortuum* of the Sulphur was kept ſo long in the fire before it was found to be any thing elſe than a *Terra damnata*, there may be divers other Reſidences of Bodies which are wont to paſs only for the Terreſtrial *Fæces* of things, and therefore to be thrown away as ſoon as the Diſtillation or Calcination of the Body that yeelded them is ended; which yet, if they were look'd and Skilfully examin'd by the fire, would appear to be differing from Elementary Earth. And I have taken notice of this

inwarrantable forwardneſs of common Chymiſts to pronounce things uſeleſs Fæces, by obſerving how often they reject the *Caput Mortuum* of Verdegreaſe; which is yet ſo farr from deſerving that Name, that not only by ſtrong fires and convenient Additaments it may in ſome hours be reduc'd into copper, but with a certain Flux Powder I ſometimes make for Recreation, I have in two or three minutes obtain'd that Metal from it. To which I may add, that having for tryall ſake kept Venetian Talck in no leſs a heat than that of a glaſs Furnace, I found after all the Brunt of the fire it had indur'd, the remaining Body, though brittle and diſcolour'd, had not loſt very much of its former Bulke, and ſeem'd ſtill to be nearer of kin to Talck than to meer Earth. And I remember too, that a candid Mineraliſt, famous for his skill in trying of Oars, requeſting me one day to procure him a certain *American* Mineral Earth of a *Virtuoſo*, who he thought would not refuſe me; I enquir'd of him why he ſeem'd ſo greedy of it: he confeſs'd to me that this Gentleman having brought that Earth to the publick Say-Maſters;

and they upon their being unable by any means to bring it to fusion or make it fly away, he (the Relator) had procur'd a little of it; and having try'd it with a peculiar Flux, separated from it neer a third part of pure Gold; so great mistakes may be committed in hastily concluding things to be Useless Earth.

Next, it may be suppos'd, That as in the Resolution of Bodies by the Fire some of the dissipated Parts may, by their various occursion occasion'd by the heat, be brought to stick together so closely as to constitute Corpuscles too heavy for the Fire to carry away; the aggregate of which Corpuscles is wont to be call'd Ashes or Earth; So other Agents may resolve the Concrete into Minute Parts after so differing a manner, as not to produce any *Caput Mortuum*, or dry and heavy Body. As you may remember *Helmont* above inform'd us, that with his great Dissolvent he divided a Coal into two liquid and volatile Bodies, æquiponderant to the Coal, without any dry or fixt Residence at all.

And indeed, I see not why it should be necessary that all Agents that resolve Bodies

Bodies into portions of differing qualifi'd matter must work on them the same way, and divide them into just such parts, both for nature and Number, as the Fire dissipates them into. For since, (as I noted before) the Bulk and shape of the small Parts of bodies, together with their Fitness and unfitness to be easily put into Motion, may make the liquors or other substances such Corpuscles compose, as much to differ from each other as do some of the Chymical principles: Why may not something happen in this case, not unlike what is usuall in the grosser divisions of bodies by Mechanical Instruments? Where we see that some Tools reduce Wood, for Instance, into parts of several shapes, bigness, and other qualities, as Hatchets and Wedges divide it into grosser parts; some more long and slender, as splinters; and some more thick and irregular, as chips; but all of considerable bulk; but Files and Saws make a Comminution of it into Dust; which, as all the others, is of the more solid sort of parts; whereas others divide it into long and broad, but thin and flexible parts, as do *Planes*: And of this kind of parts it self there is also a

variety according to the Difference of the Tools employ'd to work on the Wood; the shavings made by the *plane* being in some things differing from those shives or thin and flexible pieces of wood that are obtain'd by *Borers*, and these from some others obtainable by other Tools. Some Chymical Examples applicable to this purpose I have elsewhere given you. To which I may add, that whereas, in a mixture of Sulphur & Salt of Tartar well melted and incorporated together, the action of pure spirit of Wine digested on it is to separate the sulphureous from the Alcalizate Parts, by dissolving the former and leaving the latter: the action of Wine (probably upon the score of its copious Phlegme) upon the same mixture is to divide it into Corpuscles consisting of both Alcalizate and Sulphureous Parts united. And if it be objected, that this is but a Factitious Concrete; I answer, that however the instance may serve to illustrate what I propos'd, if not to prove it; and that Nature her self doth in the bowels of the Earth make Decompounded Bodies, as we see in Vitriol, Cinnaber, and even in Sulphur it self; I will not urge that the

the Fire divides new Milk into five differing Subſtances; but Runnet and Acid Liquors divide it into a Coagulated matter and a thin Whey: And on the other ſide churning divides it into Butter and Butter-milk, which may either of them yet be reduc'd to other ſubſtances differing from the former. I will not preſs this, I ſay, nor other inſtances of this Nature, becauſe I cannot in few words anſwer what may be objected, that theſe Concretes ſequeſtred without the help of the Fire may by it be further divided into Hypoſtatical Principles. But I will rather repreſent, That whereas the ſame ſpirit of Wine will diſſociate the Parts of Camphire, and make them one Liquor with it ſelf; *Aqua Fortis* will alſo disjoyne them, and put them into motion; but ſo as to keep them together, and yet alter their Texture into the form of an Oyle. I know alſo an uncompounded Liquor, that an extraordinary Chymiſt would not allow to be ſo much as Saline, which doth (as I have try'd) from Coral it ſelf (as fixt as divers judicious writers aſſert that Concrete to be) not only obtain a noble Tincture without the Intervention of Nitre or o-

ther Salts; but will carry over the Tincture in Distillation. And if some reasons did not forbid me, I could now tell you of a *Menstruum* I make my self, that doth more odly dissociate the parts of Minerals very fixt in the fire. So that it seems not incredible, that there may be some Agent or way of Operation found, whereby this or that Concrete, if not all Firme Bodies, may be resolv'd into parts so very minute and so apt to stick close to one another, that none of them may be fixt enough to stay behind in a strong Fire, and to be incapable of Distillation; nor consequently to be look'd upon as Earth. But to return to *Helmont*; the same Author somewhere supply's me with another Argument against the Earth's being such an Element as my Adversaries would have it. For he somewhere affirmes, that he can reduce all the Terrestrial parts of mixt bodies into insipid water; whence we may argue against the Earths being one of their Elements, even from that Notion of Elements, which you may remember *Philoponus* recited out of *Aristotle* himself when he lately disputed for his Chymists against *Themistius*. And here we may

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on this occasion consider, that since a Body, from which the Fire hath driven away its looser parts, is wont to be look'd upon as Earth, upon the Account of its being endow'd with both these qualities, Tastlesnesse and Fixtnesse, (for Salt of Tartar, though Fixt, passes not among the Chymists for Earth, because 'tis strongly Tasted) if it be in the power of Natural Agents to deprive the *Caput Mortuum* of a body of either of those two Qualities, or to give them both to a portion of matter that had them not both before, the Chymists will not easily define what part of a resolv'd Concrete is Earth, and make out, that that Earth is a primary, simple, and indestructible Body. Now there are some cases wherein the more skilful of the Vulgar Chymists themselves pretend to be able, by repeated Cohobations and other fit Operations, to make the Distilled parts of a Concrete bring its own *Caput Mortuum* over the Helme, in the forme of a Liquor, in which state being both Fluid and Volatile, you will easily beleeve it would not be taken for Earth. And indeed by a skilful, but not Vulgar, way of managing some Concretes, there may be more ef-

fected in this kind, than you perhaps would easily think. And on the other side, that either Earth may be Generated, or at least Bodies that did not before appear to be neer Totally Earth may be so alter'd as to pass for it, seem very possible, if *Helmont* have done that by A which he mentions several places; especially where he sai that he knowes wai whereby Sulphur on dissolv'd is all of it fix'd into a Te restrial Powder, and the whole Bo of Salt-Petre may be turn'd into Ear Which last he elsewhere saies is Do by the Odour only of a certain Sulph reous Fire. And in another place H mentions one way of doing this, whi I cannot give you an Account of; b cause the Materials I had prepar'd f Trying it, were by a Servants mistak unhappily thrown away.

Novi item modos quibus totum Sal-petræ in terram convertitur, totumque Sulphur semel dissolutum fixetur in Pulverem terreum. Helmont in Compl. atque Mist. Elementor. Sect. 24.

And these Last Arguments may l confirm'd by the Experiment I have o ten had occasion to mention concernin the Mint I produc'd out of Wate And partly by an Observation of *Ro*

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deletius concerning the Growth of Animals also, Nouriſh'd but by Water, which I remember'd not to mention, when I diſcours'd to you about the Production of things out of Water. This Diligent Writer then in his inſtructive book of fiſhes, affirmes That his Wife kept a fiſh in a Glaſs of water without any other Food for three years; in which ſpace it was conſtantly augmented, till at laſt it could not come out of the Place at which it was put in, and at length was too big for the glaſs it ſelf, though that were of a large capacity. And becauſe there is no juſt reaſon to doubt, that this Fiſh, if Diſtill'd would have yeelded the like differing ſubſtances with other Animals; And However, becauſe the Mint, which I had out of water, afforded me upon Diſtillation a good quantity of Charcoal; I think I may from thence inferr, that Earth it ſelf may be produc'd out of Water; or if you pleaſe, that water may be tranſmuted into Earth; and conſequently, that though it could be prov'd, that Earth is an Ingredient actually in-exiſtent in the Vegetable and Animal Bodies whence it may be obtain'd by Fire: yet it would not

Lib. 1. *cap.* 2.

not neceſſarily follow, that Earth, as pre-exiſtent Element does with othe Principles convene to make up thoſ Bodies whence it ſeems to have been ſe parated.

After all is ſaid (ſaies *Eleutherius* I have yet ſomething to Object, that cannot but think conſiderable, ſinc *Carneades* himſelf alledg'd it as ſuch; ſo (continues *Eleutherius* ſmiling) I mu make bold to try whether you can a luckily anſwer your own Arguments, a thoſe of your Antagoniſts, I mean (pu ſues he) that part of your Conceſſion wherein you cannot but remember, tha you ſupply'd your Adverſaries with a Example to prove that there may be E lementary Bodies, by taking Notice tha Gold may be an Ingredient in a mult tude of differing Mixtures, and yet re tain its Nature, notwithſtanding all tha the Chymiſts by their Fires and Corro ſive Waters are able to do to Deſtro it.

I ſufficiently intimated to you at tha time (replies *Carneades*) that I propos' this Example, chiefly to ſhew you hov Nature may be Conceived to hav made Elements, not to prove that ſh actuall

dually has made any; And you know, hat *a poſſe ad eſſe* the Inference will ot hold. But (continues *Carneades*) o anſwer more directly to the Objecti-n drawn from Gold, I muſt tell You, hat though I know very well that di-ers of the more ſober Chymiſts have omplain'd of the Vulgar Chymiſts, as of Mountebanks or Cheats, for pretend-ng ſo vainly, as hitherto they have done, o Deſtroy Gold; Yet I know a cer-ain *Menſtruum* (which our Friend has nade, and intends ſhortly to commu-nicate to the Ingenious) of ſo piercing and powerful a Quality, That if not-withſtanding much care, and ſome skill, I did not much deceive my ſelf, I have with it really deſtroy'd even refin'd Gold, and brought it into a Metalline Body of another colour and Nature, as I found by Tryals purpoſely made. And if ſome juſt Conſiderations did not for the preſent Forbid it, I could Perchance here ſhew you by another Experiment or Two of my own Trying, that ſuch *Menſtruums* may be made as to entice a-way and retain divers parts from Bo-dies, which even the more Judicious and Experienc'd *Spagyriſts* have pro-nounc'd

nounc'd irresoluble by the Fire. Thou
(which I Desire you would mark)
neither of these Instances, the Gold
Precious Stones be Analyz'd into any
the *Tria Prima*, but only Reduc'd
new Concretes. And indeed there
a great Disparity betwixt the Operat
ons of the several Agents whereby t
Parts of a Body come to be Dissipate
As if (for Instance) you dissolve the p
rer sort of Vitriol in common Wate
the Liquor will swallow up the Miner
and so Dissociate its Corpuscles, th
they will seem to make up but one L
quor with those of the water; and y
each of these Corpuscles retains its N
ture and Texture, and remains a Vitr
olate and Compounded Body. But
the same Vitriol be exposed to a stron
Fire, it will then be divided not only, a
before, into smaller parts, but into He
terogeneous Substances, each of the Vi
triolate Corpuscles that remain'd en
tire in the water, being it self upon th
Destruction of its former Texture Dissi
pated or divided into new Particles o
differing Qualities. But Instances mor
fitly applicable to this purpose I hav
already given you. Wherefore to re
turn

rn to what I told you about the De-uction of Gold; that Experiment ivites me to Repreſent to you, that hough there were either Saline, or ilphureous, or Terreſtrial Portions of atter, whoſe parts were ſo ſmall, ſo mly united together, or of a figure ſo t to make them cohere to one another, is we ſee that in quickſilver broken in- little Globes, the Parts brought to uch one another do immediately re-nbody) that neither the Fire, nor the u-ual Agents, employ'd by Chymiſts, are iercing enough to divide their Parts, o as to deſtroy the Texture of the ſingle Corpuſcles; yet it would not neceſſarily ollow, That ſuch Permanent Bodies vere Elementary; ſince 'tis poſſible there nay be Agents found in Nature, ſome of whoſe parts may be of ſuch a Size nd Figure as to take better Hold of ome parts of theſe ſeemingly Elemen-ary Corpuſcles than theſe parts do of the reſt, and Conſequently may carry away ſuch parts with them, and ſo diſ-ſolve the Texture of the Corpuſcle by pulling its parts aſunder. And if it be ſaid, that at leaſt we may this way diſ-cover the Elementary Ingredients of things

things, by obſerving into what Subſta
ces theſe Corpuſcles, that were reput
pure are divided; I anſwer, that 'tis n
neceſſary that ſuch a Diſcovery ſhou
be practicable. For if the Particles
the Diſſolvent do take ſuch firm ho
of thoſe of the Diſſolved Body, th
muſt conſtitute together new Bodies,
well as Deſtroy the Old; and the ſtric
Union, which according to this *Hyp*
theſis may well be ſuppos'd betwixt t
Parts of the Emergent Body, w
make it as Little to be Expected th
they ſhould be pull'd aſunder, but l
little Parts of matter, that to Divi
them Aſſociate Themſelves and ſti
extreamly cloſe to thoſe of them whi
they ſever from their Former Adh
rents. Beſides that it is not impoſſibl
that a Corpuſcle ſuppos'd to be Eleme
tary may have its Nature changed, wit
out ſuffering a Divorce of its parts, bar
ly by a new Texture Effected by ſom
powerful Agent; as I formerly told yo
the ſame portion of matter may eaſil
by the Operation of the Fire be turn
at pleaſure into the form of a Britt
and Tranſparent, or an Opacous an
Malleable Body.

An

And indeed, if you consider how farr he bare Change of Texture, whether nade by Art or Nature (or rather by Nature with or without the assistance of nan) can go in producing such New Qualities in the same parcel of matter, nd how many inanimate Bodies (such s are all the Chymical productions of he Fire) we know are Denominated nd Distinguish'd not so much by any maginary Substantial Form, as by the ggregate of these Qualities; If you con- ider these Things, I say, and that the arying of either figure, or the Size, or the Motion, or the Situation, or Con- nexion of the Corpuscles whereof any of these Bodies is compos'd, may alter he Fabrick of it, you will possibly be nvited to suspect with me, that there is no great need that Nature should al- waies have Elements before hand, whereof to make such Bodies as we call mixts. And that it is not so easie as Chymists and others have hitherto Ima- gin'd, to discern, among the many differ- ing Substances that may without any extraordinary skill be obtain'd from the same portion of matter, Which ought to be esteemed exclusively to all the rest,

its

its in-existent Elementary Ingredients much less to determine what Primogeneal and Simple Bodies convened together to compose it. To exemplify this I shall add to what I have already on several occasions Represented, but this single instance.

You may remember (*Eleutherius*) that I formerly intimated to you, that beside Mint and Pompions, I produced diver other Vegetables of very differing Natures out of Water. Wherefore yo will not, I presume, think it incongruous to suppose, that when a slender Vine slip is set into the ground, and takes roo there, it may likewise receive its Nutriment from the water attracted out o the earth by its roots, or impell'd by th warm'th of the Sun, or pressure of th ambient air into the pores of them. An this you will the more easily beleeve, you ever observ'd what a strange quan tity of Water will Drop out of a woun given to the Vine, in a convenient place at a seasonable time in the Spring; an how little of Taste or Smell this *Aqua Vitis*, as Physitians call it, is endow'd with notwithstanding what concoction or al teration it may receive in its passag through

through the Vine, to discriminate it from common Water. Supposing then this Liquor, at its first entrance into the roots of the Vine, to be common Water; Let us a little consider how many various Substances may be obtain'd from it; though to do so, I must repeat somewhat that I had a former occasion to touch upon. And first, this Liquor being Digested in the plant, and assimilated by the several parts of it, is turn'd into the Wood, Bark, Pith, Leaves, &c. of the Vine; The same Liquor may be further dry'd, and fashion'd into Vine-buds, and these a while after are advanced unto sowre Grapes, which express'd yeeld Verjuice, a Liquor very differing in several qualities both from Wine and other Liquors obtainable from the Vine: These sowre Grapes, being by the heat of the Sun concocted and ripened, turne to well tasted Grapes; These, if dry'd in the Sun and Distill'd, afford a fætid Oyle and a piercing *Empyreumatical* Spirit, but not a Vinous Spirit; These dry'd Grapes or Raisins, boyl'd in a convenient proportion of Water, make a sweet Liquor, which, being betimes distill'd, afford an Oyle & Spirit much like

those of the Raisins themselves; If the juice of the Grapes be squeez'd out and put to Ferment, it first becomes a sweet and turbid Liquor, then grows lesse sweet and more clear, and then affords in common Distillations not an Oyle but a Spirit, which, though inflamable like Oyle, differs much from it, in that it is not fat, and that it will readily mingle with Water. I have likewise without Addition obtain'd in processe of time (and by an easie way which I am ready to teach you) from one of the noblest sorts of Wine, pretty store of pure and curiously figured Chrystals of Salt, together with a great proportion of a Liquor as sweet almost as Hony; and these I obtained not from Must, but True and sprightly Wine; besides the Vinous Liquor, the fermented Juice of Grapes is partly turned into liquid Dregs or Leeze, and partly into that crust or dry feculancy that is commonly called Tartar; and this Tartar may by the Fire be easily divided into five differing substances; four of which are not Acid, and the other not so manifestly Acid as the Tartar it self; The same Vinous Juice after some time, especially if it be not carefully kept

kept, Degenerates into that very sowre Liquor called Vinegar; from which you may obtain by the Fire a Spirit and a Chrystalline Salt differing enough from the Spirit and Lixiviate Salt of Tartar. And if you poure the Dephlegm'd Spirit of the Vinegar upon the Salt of Tartar, there will be produc'd such a Conflict or Ebullition, as if there were scarce two more contrary Bodies in Nature; and oftentimes in this Vinegar you may observe part of the matter to be turned into an innumerable company of swimming Animals, which our Friend having divers years ago observed, hath in one of his Papers taught us how to discover clearly without the help of a *Microscope*.

Into all these various Schemes of matter, or differingly Qualifyed Bodies, besides divers others that I purposely forbear to mention, may the Water, that is imbib'd by the roots of the Vine, be brought, partly by the formative power of the plant, and partly by supervenient Agents or Causes, without the visible concurrence of any extraneous Ingredient; but if we be allow'd to add to the Productions of this transmuted Water a few other substances, we may much

encreaſe the Variety of ſuch Bodies; a
though in this ſecond ſort of Product
ons, the Vinous parts ſeem ſcarce to r
tain any thing of the much more fix
Bodies wherewith they were mingl'd
but only to have by their Mixture wi
them acquir'd ſuch a Diſpoſition, th
in their receſs occaſion'd by the Fi
they came to be alter'd as to ſhape,
Bigneſs, or both, and aſſociated after
New manner. Thus, as I formerly to
you, I did by the Addition of a *Cap*
Mortuum of Antimony, and ſome oth
Bodies unfit for Diſtillation, obta
from crude Tartar, ſtore of a very V
latile and Chryſtalline Salt, differing v
ry much in ſmell and other Qualiti
from the uſuall ſalts of Tartar.

But (ſaies *Eleutherius*, interruptin
him at theſe Words) if you have no r
ſtraint upon you, I would very gladl
before you go any further, be more pa
ticularly inform'd, how you make thi
Volatile Salt, becauſe (you know) tha
ſuch Multitudes of Chymiſts have by
ſcarce imaginable variety of waies, a
tempted in Vain the Volatilization o
the Salt of Tartar, that divers learne
Spagyriſts ſpeak as if it were impoſſibl

to

) make any thing out of Tartar, that
: all be Volatile in a Saline Forme, or,
; ſome of them expreſs it, *in forma ſic-*
(. I am very farr from thinking (an-
/ers *Carneades*) that the Salt I have
: ention'd is that which *Paracelſus*
:id *Helmont* mean, when they ſpeak of
ıl Tartari Volatile, and aſcribe ſuch
eat things to it. For the Salt I ſpeak
falls extreamly ſhort of thoſe Ver-
es, not ſeeming in its Taſt, Smel, and
her Obvious Qualities, to differ very
uch (though ſomething it does differ)
om Salt of Harts-horn, and other Vo-
tile Salts drawn from the Diſtill'd
arts of Animals. Nor have I yet
ade Tryals enough to be ſure, that it
a pure Salt of Tartar without parti-
ipating any thing at all of the Nitre,
r Antimony. But becauſe it ſeems
ore likely to proceed from the Tar-
ır, than from any of the other In-
redients, and becauſe the Experiment
; in it ſelf not Ignoble, and Luciferous
nough (as ſhewing a new way to pro-
uce a Volatile Salt, contrary to Acid
alts, from Bodies that otherwiſe are
)bſerv'd to yeeld no ſuch Liquor, but
ither only, or chiefly, Acid ones,) I

ſhall, to ſatisfie you, acquaint you be
fore any of my other Friends with th
way I now uſe (for I have formerly us'
ſome others) to make it.

Take then of good Antimony, Sal
Petre and Tartar, of each an equ
Weight, and of Quicklime Halfe th
Weight of any one of them; let theſe b
powder'd and well mingl'd; this don
you muſt have in readineſs a long nec
or Retort of Earth, which muſt be plac
in a Furnace for a naked Fire, and hav
at the top of it a hole of a convenien
Bigneſs, at which you may caſt in th
Mixture, and preſently ſtop it up again
this Veſſel being fitted with a large Re
ceiver muſt have Fire made under it
till the bottom of the ſides be red hot
and then you muſt caſt in the above pre
par'd Mixture, by aboute halfe a ſpoon
ful (more or leſs) at a time, at the hol
made for that purpoſe; which bein
nimbly ſtopt, the Fumes will paſs int
the Receiver and condenſe there into
Liquor, that being rectifi'd will be of
pure Golden Colour, and carry up tha
colour to a great height; this Spirit a
bounds in the Salt I told you of, part o
which may eaſily enough be ſeparate
b

by the way I use in such cases, which is, to put the Liquor into a glass Egg, or bolthead with a long and narrow Neck. For if this be plac'd a little inclining in hot sand, there will sublime up a fine Salt, which, as I told you, I find to be much of kin to the Volatile Salts of Animals: For like them it has a Saltish, not an Acid Salt; it hisses upon the Affusion of Spirit of Nitre, or Oyle of Vitriol; it precipitates Corals Dissolv'd in Spirit of Vinegar; it turnes the blew Syrup of Violets immediately green; it presently turnes the Solution of Sublimate into a Milkie whiteness; and in summ, has divers Operations like those that I have observ'd in that sort of Salts to which I have resembled it: and is so Volatile, that for Distinction sake, I call it *Sal Tartari Fugitivus.* What vertues it may have in Physick I have not yet had the opportunity to try; but I am apt to think they will not be despicable. And besides that, a very Ingenious Friend of mine tells me he hath done great matters against the stone with a Preparation not very much Differing from ours: a very Experienc'd Germane Chymist finding that I was

unacquainted with the waies of makin
this ſalt, told me that in a great City i
his Country, a noted Chymiſt prizes i
ſo highly, that he had a while ſince pro
cur'd a Priviledge from the Magiſtrates
that none but He, or by his Licence
ſhould vent a Spirit made almoſt afte
the ſame Way with mine, ſave that h
leaves out one of the Ingredients, name
ly the Quick-lime. But, (continues *Car
neades*) to reſume my Former Diſcourſ
where your Curioſity interrupted it

Tis alſo a common practice in *Fran*
to bury thin Plates of Copper in th
Marc (as the French call it) or Husk
of Grapes, whence the Juice has bee
ſqueez'd out in the Wine-preſs; and b
this means the more ſaline parts c
thoſe Husks, working by little and lit
tle upon the Copper, Coagulat
Themſelves with it into that Blewiſ
Green Subſtance we in Engliſh cal
Verdigreaſe. Of which I therefore tak
Notice, becauſe having Diſtill'd it in
Naked Fire, I found, as I expected, tha
by the Aſſociation of the Saline witl
the Metalline parts, the former were ſc
alter'd, that the Diſtill'd Liquor, evei
without Rectification, ſeem'd by ſmel

anc

and Taſt, ſtrong almoſt like *Aqua Fortis*, and very much ſurpaſſed the pureſt and moſt Rectifi'd Spirit of Vinegar that ever I made. And this Spirit I therefore aſcribe to the ſalt of the Husks alter'd by their Co-Mixture with the Copper (though the Fire afterwards Divorce and Tranſmute them) becauſe I found this latter in the bottom of the Retort in the Forme of a *Crocus* or reddiſh powder: And becauſe Copper is of too ſluggiſh a Nature to be forc'd over in cloſe Veſſels by no ſtronger a heat. And that which is alſo ſomewhat Remarkable in the Diſtillation of good Verdigreaſe, (or at leaſt of that ſort that I us'd) is this, that I Never could obſerve that it yeelded me any oyl, (unleſs a little black ſlime which was ſeparated in Rectification may paſs for Oyle) though both Tartar and Vinegar,(eſpecially the former) will by Diſtillation yeeld a Moderate proportion of it. If likewiſe you poure Spirit of Vinegar upon Calcin'd Lead, the Acid Salt of the Liquor will by its Commixture with the Metalline parts, though inſipid, acquire in few hours a more than Saccharine ſweetneſs; and theſe Saline parts

parts being by a ſtrong Fire Diſtill'd from the Lead wherewith they were imbody'd, will, as I formerly alſo noted to a Different purpoſe, leave the Metal behind them alter'd in ſome qualities from what it was, and will themſelves aſcend, partly in the Form of an unctuous Body or Oyle, partly in that of Phlegme, but for the greateſt part in the Forme of a ſubtile Spirit, indow'd, beſides divers new Qualities which I am not now willing to take notice of, with a ſtrong ſmell very much other than that of Vinegar, and a piercing taſt quite differing both from the Sowreneſs of the Spirit of Vinegar, and the Sweetneſs of the Sugar of Lead.

To be ſhort, as the difference of Bodies may depend meerly upon that of the ſchemes whereinto their Common matter is put; So the ſeeds of Things, the Fire and the other Agents are able to alter the minute parts of a Body (either by breaking them into ſmaller ones of differing ſhapes, or by Uniting together theſe Fragments with the unbroken Corpuſcles, or ſuch Corpuſcles among Themſelves) and the ſame Agents partly by Altering the ſhape or bigneſs

bigneſs of the Conſtituent Corpuſcles of a Body, partly by driving away ſome of them, partly by blending others with them, and partly by ſome new manner of connecting them, may give the whole portion of matter a new Texture of its minute parts, and thereby make it deſerve a new and Diſtinct name. So that according as the ſmall parts of matter recede from each other, or work upon each other, or are connected together after this or that determinate manner, a Body of this or that denomination is produced, as ſome other Body happens thereby to be alter'd or deſtroy'd.

Since then thoſe things which Chymiſts produce by the help of the Fire are but inanimate Bodies; ſince ſuch fruits of the Chymiſts skill differ from one another but in ſo few qualities that we ſee plainly that by fire, and other Agents we can employ, we can eaſily enough work as great alterations upon matter, as thoſe that are requiſite to change one of theſe Chymical Productions into another; Since the ſame portion of matter may without being Compounded with any extraneous Body, or at leaſt Element, be made to put on ſuch a variety

riety of formes, and consequently to be (successively) turn'd into so many differing Bodies; And since the matter, cloath'd with so many differing formes, was originally but water, and that in its passage through so many transformations, it was never reduc'd into any of those substances which are reputed to be the Principles or Elements of mixt Bodies, except the violence of the fire, which it self divides not Bodies into perfectly simple or Elementary substances, but into new Compounds; Since, I say, these things are so, I see not why we must needs beleeve that there are any Primogeneal & simple Bodies, of which, as of Pre-existent Elements, Nature is obliged to compound all others. Nor do I see why we may not conceive that she may produce the Bodies accounted mixt out of one another by Variously altering and contriving their minute parts, without resolving the matter into any such simple or Homogeneous substances as are pretended. Neither, to dispatch, do I see why it should be counted absurd to think, that when a Body is resolv'd by the Fire into its suppos'd simple Ingredients, those substances are not true and

proper

proper Elements, but rather were, as it were, Accidentally produc'd by the fire, which by Diſſipating a Body into minute Parts does, if thoſe parts be ſhut up in Cloſe Veſſels, for the moſt part neceſſarily bring them to Aſſociate Themſelves after another manner than before, and ſo bring Them into Bodies of ſuch Different Conſiſtences, as the Former Texture of the Body and Concurrent Circumſtances make ſuch disbanded particles apt to Conſtitute; as experience ſhews us (and I have both noted it, and prov'd it already) that as there are ſome Concretes whoſe parts, when diſſipated by fire, are fitted to be put into ſuch Schemes of matter as we call Oyle, and Salt, and Spirit; So there are others, ſuch as are eſpecially the greateſt part of Minerals, whoſe Corpuſcles being of another Size or figure, or perhaps contriv'd another Way, will not in the Fire yeeld Bodies of the like Conſiſtences, but rather others of differing Textures; Not to mention, that from Gold and ſome other Bodies, we ſee not that the Fire ſeparates any Diſtinct Subſtances at all; nor that even thoſe Similar Parts of

Bodies

Bodies, which the Chymists Obtain by the Fire, are the Elements whose names they bear, but Compound Bodies, upon which, for their resemblance to them in consistence, or some other obvious Quality, Chymists have been pleas'd to bestow such Appellations.

THE

THE CONCLUSION.

THese last Words of *Carneades* being soon after follow'd by a noise which seem'd to come from the place where the rest of the Company was, he took it for a warning, that it was time for him to conclude or break off his Discourse; and told his Friend; By this time I hope you see, *Eleutherius*, that if *Helmonts* Experiments be true, it is no absurdity to question whether that Doctrine be one, that doth not Assert Any Elements in the sence before explain'd. But because that, as divers of my Arguments suppose the marvellous power of the *Alkahest* in the Analyzing of Bodies, so the Effects ascrib'd to that power are so unparallell'd and stupendous,

dous, that though I am not sure bu
that there may be such an Agent, ye
little less than ἀυτοψία seems requisite t
make a man sure there is. And conse
quently I leave it to you to judge, hov
farr those of my Arguments that ar
built upon *Alkahestical* Operations ar
weakned by that Liquors being Match
less; and shall therefore desire you no
to think that I propose this Parado
that rejects all Elements, as an Opinio
equally probable with the former par
of my discourse. For by that, I hope, yo
are satisfied, that the Arguments, won
to be brought by Chymists to prov
That all Bodies consist of either Thre
Principles, or Five, are far from bein
so strong as those that I have employ'
to prove, that there is not any certai
and Determinate number of such Prin
ciples or Elements to be met with Un
versally in all mixt Bodies. And I sup
pose I need not tell you, that these *An
ti-Chymical* Paradoxes might have bee
manag'd more to their Advantage; bu
that having not confin'd my Curiosity t
Chymical Experiments, I, who am bu
a young Man, and younger Chymist
can yet be but slenderly furnished wit
them

hem, in reference to so great and diffi-
ult a Task as you impos'd upon me;
esides that, to tell you the Truth, I
urst not employ some even of the best
xperiments I am acquainted with, be-
ause I must not yet disclose them; but
owever, I think I may presume that
hat I have hitherto Discoursed will
nduce you to think, that Chymists have
een much more happy in finding Ex-
eriments than the Causes of them; or
n assigning the Principles by which
hey may best be explain'd. And indeed,
hen in the writing of *Paracelsus* I meet
with such Phantastick and Un-intel-
igible Discourses as that Writer often
puzzels & tires his Reader w^th, father'd
upon such excellent Experiments,
as though he seldom clearly teach-
es, I often find he knew; methinks the
Chymists, in their searches after truth,
are not unlike the Navigators of *Solo-
mons Tarshish* Fleet, who brought home
from their long and tedious Voyages,
not only Gold, and Silver, and Ivory,
but Apes and Peacocks too; For so the
Writings of several (for I say not, all) of
your Hermetick Philosophers present
us, together with divers Substantial and

noble Experiments, Theories, which either like Peacocks feathers make a great shew, but are neither solid nor useful; or else like Apes, if they have some appearance of being rational, are blemish'd with some absurdity or other, that when they are *Attentively* consider'd, make them appear Ridiculous.

Carneades having thus finish'd his Discourse against the received Doctrine of the *Elements*, *Eleutherius* judging he should not have time to say much to him before their separation, made some haste to tell him; I confess, *Carneades*, that you have said more in favour of your Paradoxes than I expected. For though divers of the Experiments you have mention'd are no secrets, and were not unknown to me, yet besides that you have added many of your own unto them, you have laid them together in such a way, and apply'd them to such purposes, and made such Deductions From them, as I have not Hitherto met with.

But though I be therefore inclin'd to think, that *Philoponus*, had he heard you, would scarce have been able in all

points

points to defend the Chymical *Hypothesis* against the arguments wherewith you have oppos'd it; yet methinks that however your Objections seem to evince a great part of what they pretend to, yet they evince it not all; and the numerous tryals of those you call the vulgar Chymists, may be allow'd to prove something too.

Wherefore, if it be granted you that you have made it probable,

First, that the differing substances into which mixt Bodies are wont to be resolved by the Fire are not of a pure and an Elementary nature, especially for this Reason, that they yet retain so much of the nature of the Concrete that afforded them, as to appear to be yet somewhat compounded, and oftentimes to differ in one Concrete from Principles of the same denomination in another:

Next, that as to the number of these differing substances, neither is it precisely three, because in most Vegetable and Animal bodies Earth and Phlegme are also to be found among their Ingredients; nor is there any one determinate number into which the Fire (as it is

wont to be employ'd) does precisely and universally resolve all compound Bodies whatsoever, as well Mineral as others that are reputed perfectly mixt:

Lastly, that there are divers Qualities which cannot well be refer'd to any of these Substances, as if they primarily resided in it and belong'd to it; and some other qualities, which though they seem to have their chief and most ordinary residence in some one of these Principles or Elements of mixt Bodies are not yet so deducible from it, but that also some more general Principles must be taken in to explicate them:

If, I say, the Chymists (continued *Eleutherius*) be so Liberall as to make you these three Concessions, I hope you will, on your part, be so civil and Equitableas to grant them these three other propositions, namely;

First, that divers Mineral Bodies and therefore probably all the rest, may be resolv'd into a Saline, a Sulphureous and a Mercurial part; And that almost all Vegetable and Animal Concretes may, if not by the Fire alone, yet by a skilfull Artist Employing the Fire as

h

his chief Instrument, be divided into five differing Substances, Salt, Spirit, Oyle, Phlegme and Earth; of which the three former by reason of their being so much more Operative than the Two Latter, deserve to be Lookt upon as the Three Active Principles, and by way of Eminence to be call'd the three principles of mixt bodies.

Next, that these Principles, Though they be not perfectly Devoid of all Mixture, yet may without inconvenience be stil'd the Elements of Compounded bodies, and bear the Names of those Substances which they most Resemble, and which are manifestly predominant in them; and that especially for this reason, that none of these Elements is Divisible by the Fire into Four or Five differing substances, like the Concrete whence it was seperated.

Lastly, That Divers of the Qualities of a mixt Body, and especially the Medical Virtues, do for the most part lodge in some One or Other of its principles, and may Therefore usefully be sought for in That Principle sever'd from the others.

And in this also (pursues *Eleutherius*) methinks

methinks both you and the Chymists may easily agree, that the surest way is to Learn by particular Experiments what differing parts particular Bodies do consist of, and by what wayes (either Actual or potential fire) they may best and most Conveniently be Separated. as without relying too much upon the Fire alone, for the resolving of Bodies. so without fruitlessly contending to force them into more Elements than Nature made Them up of, or strip the sever'd Principles so naked, as by making Them Exquisitely Elmentary to make them almost useless.

These things (subjoynes *Eleu.*) I propose, without despairing to see them granted by you; not only because I know that you so much preferr the Reputation of *Candour* before that of subtility, that your having once suppos'd a truth would not hinder you from imbracing it when clearly made out to you; but because, upon the present occasion, it will be no disparagement to you to recede from some of your Paradoxes, since the nature and occasion of your past Discourse did not oblige you to declare your own opinions, but only to

to personate an Antagonist of the Chymists. So that concludes he, with a smile) you may now by granting what I propose, add the Reputation of Loving the truth sincerely to that of having been able to oppose it subtilly.

Carneades's haste forbidding him to answer this crafty piece of flattery; Till I shall (saies he) have an opportunity to acquaint you with my own Opinions about the controversies I have been discoursing of, you will not I hope, expect I should declare my own sence of the Argument I have employ'd. Wherefore I shall only tell you thus much at present; that though not only an acute Naturalist, but even I my self could take plausible Exceptions at some of them; yet divers of them too are such as will not perhaps be readily answer'd, and will Reduce my Adversaries, at least, to alter and Reform their *Hypothesis*. I perceive I need not mind you that the Objections I made against the Quaternary of Elements and Ternary of Principles needed not to be oppos'd so much against the Doctrines Themselves, either of which, especially the latter, may be much more probably

bably maintain'd than hitherto it seems to have been, by those Writers for it I have met with) as against the unaccurateness and the unconcludingness of the *Analytical* Experiments vulgarly Relyed On to Demonstrate them.

And therefore, if either of the two examin'd Opinions, or any other Theory of Elements, shall upon rational and Experimental grounds be clearly made out to me; 'Tis Obliging, but not irrational, in you to Expect, that I shall not be so farr in Love with my Disquieting Doubts, as not to be content to change them for undoubted truths. And (concludes *Carneades* smiling) it were no great disparagement for a Sceptick to confesse to you, that as unsatisfy'd as the past discourse may have made you think me with the Doctrines of the Peripatetick's, and the Chymists, about the Elements and Principles, I can yet so little discover what to acquiesce in, that perchance the Enquiries of others have scarce been more unsatisfactory to me, than my own have been to my self.

FINIS.

Experiments

AND

NOTES

About the

PRODVCIBLENESS

OF

Chymicall Principles;

Being Parts of an Appendix, design'd to be added to the SCEPTICAL CHYMIST.

By the Authour of that Booke.

OXFORD,
Printed by *H. Hall* for *Ric. Davis*, 1680.

The Authors Preface.



Having long since obſerv'd, that a great part of the erroneous Reaſonings and Concluſions of Learned Men, as well about Phyſicall, as other ſubjects, proceeds not ſo much from their making bad illations, as from their aſſuming falſe or uncertaine Principles, to draw their conſequences from: I thought, I could ſcarce miſpend the time I allow'd myſelfe for Chymicall Studies, if I employ'd ſome part of it, in examining the Doctrine about the Principles of Natural Bodies. Upon this account I did, in the year 1661. *venture abroad my* Sceptical Chymiſt, *to acquaint the inquiſitive with my doubts, and excite them, to a more thorow diſquiſition of a ſubject, ſo conſiderable, as well to Natural Philoſophy, as to Phyſick. This diſcourſe being once publiſhed in* Engliſh, *and ſoone after in* Latine: *I thought*

it

fit to wait a while, that I might learn what Judgement would be made of it, and whether any of the Chymists *would return an answer to it, and in the mean while, to gratifie those that appear'd desirous of having it soon reprinted, I gathered divers Notes, (some of them considerable for bulk) to be inserted here and there, as inlargements in the next Edition, whose volume I was not unwilling somewhat to encrease, not only because I thought Truth in general, a thing worthy that the lovers of it should take pains to discover, and establish it, but because, I look'd upon the truth enquired after, in the* Sceptical Chymist, *as of no mean importance; especially since the mistakes that very many have made about it, have I fear, not only been prejudicial to Natural Philosophy, but have, by severall Men, as well Learned as Ignorant, been adopted both into the speculations, and practise of Physitians; whose Art being conversant about the Health and Life of Man, Doctrinal errours in it, cannot but be dangerous, and therefore fit, as much as is possible, to be solicitously avoided, or remov'd. These inconveniencies I hop'd*

might in some measure be obviated; if it were further made appear by Experiments as well as Reasonings, that the vulgar doctrine of the Tria Prima *is at least very* questionable, *or uncertaine and very* narrow. *For the contrary persuasions, about these Principles, has misled divers Learned Men to give, and take up with precarious and superficial accounts of divers* Phænomena *of Nature, by which meanes they have been diverted from employing their Witts (wherein divers of them are happy) in the investigation of the true and fundamentall causes, the discovery whereof, would have enabled them, instead of dark and superficial, to give intelligible and particular explications of those* Phænomena, *and many others. The difference between the accounts given of the same* Phænomena, *by the Hypostatical, and by the Mechanical Principles, may be seen exemplyfied, by particular instances in other Papers; Wherefore I shall proceed to observe as to* Physick, *that besides the mistakes which I doubt, divers Learned Men have by another valuation of the Doctrine of the* Tria prima, *been led into, in relation to the causes of divers things that occur to humane Bodies, and even in Chymical*

Chymical operations; besides this I say, I fear that the too confident opinion of the Doctrine I question has made divers practitioners of Physick, *make wrong estimates of Medicines. But after I had waited a competent time, I perceiv'd no Author vouchsaf'd the* Sceptical Chymist *an answer; but a very Ingenious Man, from whom I chiefly expected it, told me, that he had indeed design'd to write one, but was hindered by considering, that I had so stated the case, that an answer could not confute that Book, by any meer Justification of the Chymists Principles, since he would be obliged also to defend the Chymical Doctrine as 'tis generally taught by the vulgar Chymists; and make good the Arguments by which they are wont to maintaine it. Since 'tis only that* Doctrine *and these Arguments, that I declare my self in that discourse to question; and he himself did not think them sound and valid. By these encouragements, I was induced to comply with the earnest solicitations of the Printer, for another Edition, but he dying soon after, and the Person to whom the right to dispose of the* English *Copy, legally came, having*

left England, *and continued out of it, for divers Years, the dispute between the Stationers that pretended to it, and treated about it, lasted so long, that a Traveller who passed this way told an acquantance of mine, that he had then (which was two or three years agoe) seen nine severall* Latine *impressions of it, since when, another has been brought me made at* Geneva. *This number of Editions (in none of which I have added or altered a Word) and the numerous citations I have mett with of it, in favourable Writers, made me unwilling to confound, or trouble, Readers by interweaving Additional Notes, with the Body of the Discourse; and so by obliging those that should hereafter Vouchsafe to mention any of the inserted passages of it, to cite the Edition as well as the Book. And therefore I was easily inclin'd, by want of Health and Leasure, to peruse againe deliberately the whole Treatise, to suppress all those Notes, that I could not readily and conveniently referr to three or four of the chief heads, I intended to enlarge upon, and without altering the forme of the Book wherein it has prov'd so fortunate to leave it intire,*

and

and publiſh my Additions alſo by themſelves by way of Appendix. This in my Intention was to conſiſt of four heads, The Producibleneſs of Chymicall Principles, *The* uncertainty of the vulgar Analyſes made by diſtillation. *The* various effects of the fire according to the differing waies of employing it. *And* doubts whether there be any Elements, *or material Principles of mixt Bodies,* one *or more* in the ſenſe vulgarly received. *But finding by the Stationers eſtimate, that the notes refer'd to the three laſt Titles, are not near ſo large as thoſe that belong to the firſt; yet they would make the book to which they ſhould be added, and which is already printed, of too great a thickneſs in proportion to its other dimenſions, I thought fitt to reſerve the other papers for another opportunity, and at this time annex nothing, but what concerns* the Producibleneſs of Chymical Principles.

But yet becauſe there are ſome generall Advertiſements that do ſomewhat more belong to this part of our deſign'd Appendix that now comes forth, than to any of the reſt, I muſt not deny them

a roome in this Preface, which I shall conclude with them.

I might justly enough alledg, in excuse of incoherence of some of the particulars that follow next after one another in the subsequent discourse, that this being confusedly but a Collection *(or if you please a* Rhapsody*) of loose* Notes, *'tis more pardonable, than strange, that some of them should want apt connections, and the stile of the discouse they compose should want uniformity. But 'tis not so much my present Work to make Apologies, as to give Advertisements, and therefore I shall proceed to tell you in the* first *place, that though the following discourse have in some places a somewhat Dogmaticall dress, yet it is cheifely meant (as becomes an Appendix to a* Sceptical *Book) to excite and assist a further inquiry, and accordingly the reader may perceive it to have been my care, not so much to play the part of a Logical Opponent, as to take occasion to sett down variety of experiments and observations, that whatever* Hypothesis *about the Material principles of mixt Body's shall prove fitt to be pitch'd upon, it may be founded*

on

on a leſs inſufficient Hiſtory of matters of fact (relating to that ſubject)that Chymiſts have been wont to take in ; and may be ſo framed, as not to be lyable to thoſe objections and difficulties, that will be here mett with, and yet perhaps were not thought of, or at leaſt were not duely taken into conſideration, when the vulgar Hypotheſis *of the* Tria prima *was eſtabliſh'd. Upon this account I am not without hope, that the following experiments and conſiderations, though propos'd by way of objections, may do ſome ſervice to the inquirers into the material Principles of things; by obliging the Chymiſts, at leaſt, to reforme their doctrine about them, and build it more cautiouſly, and that upon a larger, as well as more ſolid foundation of Natural Hiſtory.*

The ſecond *thing whereof I am to advertiſe the Reader, is that I would not have him infer from any thing that (prompted by the exegencies of my deſign) I have ſaid in the following papers, that I either do undervalue, or would decry Chymiſtry,* or *Chymiſts themſelves indiſcriminately. For I have a very*

differing

differing esteem of the Notionall *and of the* Practicall *part of Chymistry. For divers of the opinions maintain'd by* Spagirists, *without excepting their grand* Hypothesis *of the* three Principles, *I have been inclin'd to question not only as a* Naturalist, *but as a* Chymist; *as seeing great cause to doubt whether they be agreeable, either to the true grounds of* Philosophy, *or the exploring Experiments of the fire. But as for* Chymical *operations, such as Destillation, Solution, Sublimation, Precipitation, and the rest; especially those seldome sufficiently valued ones, Digestion and Cohobation, I take them to be excellent tooles in the Hands of a Naturall* Philosopher, *and to be by him applicable to many other, and perhaps some nobler uses than they are wont to be put to, in* Laboratories; *since if they be skilfully employ'd they may be successfully so, as well to* discover *Nature, as to* correct, *to* imitate, *and in some cases to* outdo *her. Nor do I only thus distinguish between the speculative and operative part of* Chymistry, *but I make a great difference between the avow'd Cultivators of that Art; and look not with the same eyes on the opinions*

and

and performances of vulgar Chymists, *and Chymical Philosophers. For we are told that there lives conceal'd in the world, a sett of* Spagyrists *of a much higher order than those that are wont to Write courses of* Chymistry *or other Bookes of that nature; being able to transmute baser Metalls into perfect ones, and do some other things, that the generality of* Chymists *confess to be extreamly difficult; and divers of the more judicious even among the* Spagyrists *themselves have judg'd impossible. The declaration of what I thinke of these latent* Philosophers *belongs to another paper. Yet in this I shall not deny but that what I have heard from divers very credible eye-witnesses, and perhaps some more immediate arguments, strongly incline me to thinke that there may have been, and may yet be, some such men, and whatever be to be thought of what they call the* Philosophers Stone, *I confess my self convinc'd by what I have seen, that there are in the World as difficult* Arcana *as divers of those which have been (perhaps not all of them justly) derided under the name of Chymicall* non-entia. *Now if there be really such adept Philosophers*

as

as we are told of; I am apt to thinke that among their other Arcana *they are Masters of extreemly potent Menstruums (which may, as far as I can guess, be some of their cheifest Tooles) and may by the help of these and other means peculiar to themselves, of working upon bodys, be able to produce in them, such alterations, as we have no examples of. and so obtain from them such similar substances, as either for number, or quality, or both, may be very different from the vulgar* Tria Prima, *or those substances Chymists are wont to* obtaine, (*for that word I chuse to employ rather than the word separate or Extract*) *by the common ways of what they call* Analysis. *For if a Man have an instrument which other men have not, and much more, if it be an excellent one, he may be able with it to performe other things, than they can without it. The* Europeans *by the help of so slight an Engine as a Mill assisted by a far slighter instrument a sieve can easily divide Corne into Bran and Meal and Flour, which even those* Americans, *for want of those helpes, were not able to do, who could do other things that are thought far more difficult. And he that has a file and a good turning lath with*

with its appurtenances, may obtain from a piece of iron both filings and shavings and concave Hemisphers and ellypses and Globes and Cylinders and other sorts of bodies, which could not be obtain'd from that Iron even by good artificers that were not furnish'd (as till of late very few were) with those instruments. And he that first found the use of Aqua Fortis *in dissolving Silver, and that though it were mixt with Gold, had by his* Menstruum *an easy way of separating those two Metalls, though ancienter Mineralists, Nor* Chymists *themselves had no liquor that would performe that worke. But* Helmonts *writings will supply me with a far nobler instance to my present purpose, if the truth of all that he delivers concerning the effects of his* Alkahest *be admitted, About the possibility of which strange solvent having elsewhere written a short exquiry, I shall forbear to say any thing of it here, but rather intimate that if there be such adept* Philosophers *as some speak of (which I thinke not Incredible) and if they have (which supposing there be such I think not unlikely) among other rare things some* Alkahestical *or other extraordinarily potent* Menstruum, *or way of penetrating and working upon mixt bodies; they may for ought I know be able to obtaine such substances from them, as may induce me, and perhaps the Chymists too, to entertaine other thoughts about the constitution of compounded bodies (as they are wont to be call'd) than either I or they now have. And therefore though as to Naturall* Philosophy *in generall I do not expect to see any Principles propos'd more comprehensive and intelligible than the* Corpuscularian *or Mechanical;*

eal; yet as to the subordinate Theory of mixt bodies in particular, I that have disputed only against the vulgar Hypothesis of the Chymists, *can easily retain a disposition to receive further light in this matter, when those that are the best able to afford it us, and from whom it will be no disparagement for much greater proficients than I, to learn, shall think fit to oblige us by doing so. In the mean time, to end this advertisement as I begun it; I should not need to say much to satisfie* Chymists *that I neither hate nor dispise their Art, even in its present state, if some things and chiefly want of leasure, would permit me to publish an essay that I wrote many Years since,* Of the usefulness of Chymistry to the Empire of Man. *Nor is it only to the practical part of Natural Philosophy that I take Chymistry as it may be manag'd, to be highly usefull, but I confess I thinke also that being ordered by a skilfull Naturalist, it may far more conduce, than those that are strangers to it are wont to think, to the Speculative part of* Physicks; *and that as the* Bolonian Stone *without being Chymically prepar'd would never be made Luminous, but being so prepar'd is brought to shine, so many other Naturall body's never afford much light to Philosophy, till Chymicall operations have qualified them to do so.*

The Last *advertisement I desire to give the Reader concernes the intention with which I I call in question the* Hypothesis *of the* Tria Prima *and some other of the Chymists* Doctrines. *For though sometimes I have had occasion to discourse like a Scepticke, yet I am far from being one of that sect; which I take to have been little*

less

leſs prejudiciall to naturall Phyloſophy *than to Divinity itſelfe. I do not with the true* Scepticks *propoſe doubts to perſwade Men that all things are doubtfull and will ever remaine ſo, (at leaſt) to humane underſtandings, but I propoſe doubts not only with* deſigne, *but with* hope, *of being at length freed from them by the attainement of undoubted truth; which I ſeek that I may find it; though if I miſs of it in one opinion I proceed to ſearch after it in the* oppoſite *or in any other where it ſeems more likely I ſhould meet with it. And to declare my mind to the diſciples of the fire, by a ſimilitude not alien from their profeſſion: ſuppoſe a Man more rich than ſkillfull ſhould Bequeath me a purſe of Guinneys, and that I ſhould have ſtrong preſumptions that ſome of them are counterfeit, what in this caſe would a Chymiſt have me do? To take them all for good in ſpite of contrary preſumptions againſt ſome of them, were very imprudent. On the other ſide to throw them all away becauſe tis probable ſome may prove counterfeit, were downright folly. That then which common prudence would direct me would be to take them all out and examine them one by one, firſt with the touch-ſtone, and then, if need be, by the* Cupell *and by* Aqua Fortis *too: and this I ſhould do with* deſire *to find all the peices true, having alſo care not only to preſerve and put back into the Purſe, thoſe that prove right; but if any be but partly adulterated, to preſerve the good portion by purifiing it, (by the Cupel or ſome other fit way) from the falſifing alloy by whoſe admixture it had been imbas'd. The application of this I leave to be made by Chymiſts. And having in another paper purpoſely diſcours'd of the cautions and limitations*

mitations without which I disallow Scepticisme, I shall only in generall profess that I more willingly embrace the truths taught by the Chymists, *than I endeavour to disprove their errors. For I looke upon* truth *as one of the cheife of those goods that* God *has of all others laid the most in common; since truth does not only, like desert Islands in* America, *belong to him that first finds it and seises on it; but even when another has lighted on it and is in possestion of it, any Man may without trespass or injury, make himselfe a sharer in it. To conclude; I am glad to find truth in the Doctrines of the chymists: but when I cannot discern it there, I chuse rather to seek it elsewhere than sit down without it. And if I any where seem to be somewhat too indulgent to suspitions against their* Hypothesis, *or arguments, I hope the usuall confidence to be mett with among most of them, consider'd; twill be look'd upon but as a compliance with the advise of* Aristotle *of bending a croocked stick the contrary way to reduce it at length to straitness. And I did with the less scruple allow my selfe this way of writing, because experience having taught me that* some *spagirists (for I speak not of all) that keep their best things close, will do more to Vindicate their art, or oppose their antagonists, than to gratifie the curious or benefit Mankinde, I thought the rousing stile I sometimes wrote in, might prove no unhopefull way to procure somewhat considerable from those great Masters, and orders of Chymicall* Arcana, *that must be provok'd before they will come out with them; as the sea is observ'd not to give us one of its preciousest treasures,* Amber-greece; *till it have been agitated by winds and stormes.*

The Publisher's Advertisement to the READER.

I Shall not entertaine the Reader with any thoughts of my own, about the following Appendix, which, without desiring to prepossess him, I shall willingly (and I thinke may safely) leave to speak for it selfe. But yet I think it may not be amiss, if I premise something to the Reader, about the publication of these Notes, as having been particularly concern'd in it.

By the opportunity I had of seeing some papers, of the Honourable Author of the ensuing Appendix;

I perceived that the Notes whic
he design'd it should consist of
were indeed most of them laid t
gether in some (though but a car
less) order, and so were witho
much difficulty fitted for the Pres
but others of them lay scatter'd u
and down amongst many others,
about differing subjects in his Ph
losophical Memorials, which part
culars not being ready at hand,
when the Ensuing Notes *were se*
to Oxford *to the* Printer, *they coul*
not be publish'd with the rest, bu
must expect some other opportunit
to appear abroad, either alone; or
their company.

Perhaps the Reader will not nee
to be told that besides the Applica
on of some of the Experiments co
tained in the following Notes, mo
of the Experiments themselves ar
new. But so many years are pa
betwi

betwixt the firſt *Edition of the* Sceptical Chymiſt, *and the* ſecond *that now comes forth; that it may be requiſite (though otherwiſe it would be improper) to advertiſe this Reader, that he is not to think, that the Author has borrowed from others thoſe Experiments and Notions, that may be met with in Bookes written in later years, as well as in the* Sceptical Chymiſt. *For the firſt* Engliſh *Edition having been put forth in the year* 1661. *and never ſince by the Author at all enlarg'd, or alter'd; 'twill ſufficiently ſhew that this Book could not borrow from thoſe that never were ſeen till after, and perhaps long after this was publiſhed. Which Advertiſement may be particularly apply'd to the late Learned Treatiſe, Intituled* Philoſophia Vetus & Nova, *wherein in one long Chapter may be*

met with an Abridgment of a grea
part of the Notions, *Experiment*
and Ratiocinations of the Sceptica
Chymist, *without any mentio*
there made, either of the great an
famous Authors Name, or his Boo
in which they first appear; Thoug
the Latine *Version of that* Treatis
was publish'd many years ago, an
reprinted many times since. An
though this be not the only Write
that hath thought fit to make u
of considerable portions of the Scep
tical Chymist, *without owning i*
I thought, what he has been pleas
to do, required to have particul
Notice taken of it: because, thoug
his modesty hath perswaded him
conceal his Name, his Learned Boo
hath made him so justly famous, th
if the Reader were not advertis'
he might easily suspect, that M
Boyle *had not lent to, but borrow*

l

ed of an Author, who appears so capable of enriching the Curious with excellent things of his own. And upon the same grounds I thinke it necessary to observe, that the Experiments to be met with in Mr. Boyles Histoy of Colours, *having been publish'd many years ago, could not be borrow'd from that most ingenious Treatise, though in that Chapter of it which treates* de coloribus, *between* 20. *and* 30. *Experiments, (If I misremember not the number) will be found the same with the like Number of* Mr. Boyles; *whose Name, though elsewhere very civilly taken notice of on some other occasion, is in that whole Chapter left unmention'd.*

I might here informe the Reader, that the Sceptical Chymist *having been many years out of Print, it chanc'd that when the*

Notes,

Notes, that make up the following Appendix, were drawn together for the Press, this Author had not a Book at hand, by comparing whereof with the particulars of his design'd Appendix, he might be sure *to avoid, (what he now but* hopes *he hath;) the suffering any thing to passe in the latter, that is truly coincident, with what was already extant in the former: (I mean, to the same purpose, and on the same occasion; for otherwise an Experiment or Notion may be more then once employ'd without meer Repetition.)*

And lastly I dare not omitt to let the Rrader know, that since the Appendix was priuted, it appears, that by an oversight, some leaves were left behind, that treating of the difference of Common Mercury's *themselves, should have been annex'd, as a kind of Appendix, to the last of the three*

three Mercurial Tracts, to be met with among the following papers: from whoſe peruſall the Reader ſhall no longer be detain'd by

His

Humble Servant

I. M.

THE INTRODUCTION to the following NOTES.

THough the Pompous title of *Hypoſtaticall Principles*, which Chymiſts have beſtowed upon the Ingredients they would have mixt bodies to conſiſt of, has perhaps ſerv'd to procure them a veneration from vulgar Heads, that are wont to eſteem things the more becauſe they underſtand them leſs; yet the maine thing, that has recommended the Chymical Principles to more diſcerning men, ſeems to be, that by the help of a few ſimple Ingredients (whereof nature is ſuppos'd to have laid up great Magazines at the beginning of things) aſſociated in differing proportions, all mixt bodies

may be compounded: and so men may acquaint themselves with the natures of *a multitude* of bodies, by first knowing the natures but of *a few*. He therefore that acknowledges he does not acquiesce in the Chymical *Hypothesis* of the *Tria Prima*, or their that add to them *Water* and *Earth* can scarce employ a more prope Argument to shake it, than, upo good ground to call in question wha they teach when they affirme *Tha their Principles are ingenerable an incorruptible*, and that Nature doe only *compound* and *dissociate* them without either *producing* or *destroyin* any of them. It will be therefo very well worth while to examine what evidence there is in an Asse tion, which, in so many of the Chy mists Reasonings and explications either manifestly imploy'd or n obscurely suppos'd. And indeed th Tenent of theirs is so principall Pillar of their *Hypothesis*, that, i case it faile them the whole structu will be in danger of ruine. For the Bodies they call *Principles* b produc'd *de Novo*, how will it b demonstrab

demonſtrable that Nature was oblig'd to take thoſe Principles made ready to her hand when ſhe was to compound à mixt body, and how will it appeare in every *Analyſis* made by fire, that the Salt (for inſtance) thereby obtain'd was not produc'd by the Chymicall operations, but was preexiſtent in the body in minute parts, which by the action of the fire were only extricated and ſeparated from the other Principles or Ingredients, and afterwards brought together: ſince in caſe the Chymical ſuppoſition be erroneous, not only the obtained Salt may be in part due to a new Production or Tranſmutation, but part of that which was really ſalt, if any ſuch thing there were antecedently to the Analyſis, might be either deſtroyed by the operation, or made to appear under ſome other forme.

OF THE PRODUCIBLENESS Of CHYMICALL Principles.

The first Part.

Of the Producibleneſs of Salt.

AMong the ſubſtances upon which Chymiſts have conferr'd the Title of Principles, *Salt* ſeems in their eſtimate to have had the Precedency, ſince they are wont to name it firſt in the enumeration of their *Tria Prima*. And 'tis generally granted, that *Salts* are wont to be the moſt conſiderable and active parts obtain'd by Chymiſts from mixt bodies. And yet perhaps the

the inviſible particles that compoſe the viſible portions of a Salt may be ſuch, and ſo conſtrued, as to be fit to make and to have perhaps actually made other portions of matter endowed with thoſe Qualities, for which Chymiſts are wont to call a body ſulphureous or mercurial, as may be inſtanced in the *Inflammability* of *Nitre*. Wherefore it may deſerve a greater meaſure of curioſity, than ſeemes to have been employed or even deſign'd by vulgar Chymiſts, to enquire, whether *Salt* indefinitely ſpeaking, may be produc'd *de Novo* (as they phraſe it) or deſtroyed; and whether at leaſt the particular, and much differing, *Species* of Salts may be changed into one another, and thereby after a manner be *produc'd* in reference to the acquired *Species* of Salt, and *deſtroy'd* in relation to that which the ſame portion of matter belong'd to before.

To premiſe ſomewhat in generall to render it probable that *Salts* may be produc'd *de Novo*, I ſhall briefly repreſent two things: The *firſt* is, that ſince *Salts* differ much in ſeverall o-

ther attributes, some being *fixt*, some *volatile*, some *Acid*, some *Urinous* &c. the two qualities wherein they agree, and which therefore make up the common and most received Notion of *Salt* in generall, are, that it is easily dissoluble in water and that it affects the Palat with a sapor, whether good or evill: and *the other* thing, is, that whether we allow the *Epicurean* Hypothesis or the *Cartesian*; the first Saline Concretions that were produc'd by Nature must be confess'd to have been made of Atomes, or of Particles, that before their conjunction, were not Saline, and therefore there appears no absurdity in conceiving that by the action of the fire or other fit Agents, small portions of matter may be so broken into minute parts, and these fragments may be so shap'd and connected, as, when they are duely associated, to compose a Body capable of being dissolved in water, and of affecting the organs of Taste.

That a Disposition to be dissoluble in this or that liquor may be acquir'd by mixture and the new Tex-

ture

ture of parts, is not without exam
ple, for as I elsewhere obserue
though powder'd sulphur will lye i
well rectifyed spirit of wine, som
Weekes or Months, without being a
all visibly dissolv'd in it, and thoug
the same liquor will for as long a tim
swim upon Salt of *Tartar* withou
making a solution of it; yet if th
Salt and Sulphur be mixt together
spirit of Wine will in less than a
hour and sometimes in less than
quarter of that time dissolve enoug
of this matter to be richly colour'
by it, and this without the help c
external heat. And I see not, why
should be impossible that the actio
of the fire, may reduce the Corpu
cles of bodies to such a minutenes's
and associate them either amon
themselves or with the Corpuscles c
other Bodies which without prepara
tion will not dissolve in water, tha
the pores intercepted between ther
may be enter'd & their loose Textur
dissolv'd by that *Menstruum*. C
which Conjecture though we have nc
a perfect instance, yet we have a Pro
bable one in that which I shall here
afte

after deliver concerning the making of Fixt *Nitre*. For though the Chrystalls of well purifyed *Salt peter* may be kept many weekes or months in an ordinary Lodging chamber (for I had not occasion to try it In a cellar) without relenting by the moisture of the Air; yet if without the addition of any body dissoluble in water or moist aire it be in great part reduced, as perhaps it may be almost in a trice, to a fixt *Alcali*, this Salt will be easily enough penetrable by the vapours that rove up and downe in the Aire, and will by that moisture, in no long time, be brought to relent, and at length will be resolved into a liquor very Analagous to that which the Chymists make of Salt of *Tartar* left in moist Cellars to deliquate.

As for the *Sapor*, which is the second Qualification to be considered in the vulgar Notion of a Saline body, I doubt, whether the necessity of it be agreeable to another Principle of theirs, and to experience. For 'tis plaine that chymicall oyles, even those pure ones that they call *Essentiall*, or even Ethereal ones, are highly sapid:

and yet, theſe not diſſolving in water, it ſeemes there is no ſtrict connection betwixt being ſaporous and being ſoluble in that liquor; and that, if bodies be reduc'd into a multitude of Parts minute and ſharpe enough, 'tis very poſſible that ſome of theſe, either in part, or in Conjunction with others, may acquire a ſize and ſhape that fits them ſenſibly to affect the organ of Taſte, though perhaps the Bodies themſelves, or perhaps thoſe Bodies that afforded them, are more of ſome other nature than of a Saline. This may be illuſtrated by theſe groſs Examples: that a ball of glaſs, for inſtance, though whiles 'tis entire it will not pricke and hurt the skin, yet if it be broken and beaten, the little fragments will; not as they are glaſs, but as they have points or edges. And ſo, though a ſtick being graſped in a Mans hand, will not pierce the skin or put him to paine, yet if it be cut into Tooth-picks or reduced to ſplinters, their ſharpneſs and ſtiffneſs gives them a power to wound, that they had not before. Something Analogous to what we in theſe examples

ſee

ee to be done upon the organs of ouch, may be conceived to be done pon the organs of Taſte (which is a ind of Touch) of which an almoſt ll inſtance may be given in purified *alt-peter*. For though this conrete have but a faint and languid aſte, yet if it be carefully diſtill'd ith ſome Additament that is not iſſoluble in water, and is inſipid, the arts of it being by the action of the re, either broken aſunder, or cleft r rub'd, or ground againſt one anoher till they are reduced to edged nd pointed Corpuſcles: *Salt-peter* I y, thus treated, will be reſolved ito differing ſubſtances, each of hich has an extreamly ſtrong and enetrant Taſte, which whence it ould proceed but from ſome ſuch ſechanicall change as we have been eſcribing, is not eaſy to declare; nd perhaps alſo the Phlegmatick liuor, that is wont to come over in nis *Analyſis*, may at leaſt, as to part f it, be produc'd by the Operation f the fire, and ſo the Phlegme being nſipid, the Taſte, I meane as much as as in the unanalyzed *Nitre*, may be

as well deſtroyed as thoſe of the ſpi-
rit and *Alcali* are generated by th
operation of the fire: But perhap
there needs no other Argument tha
the ſame parts of matter, according t
its differing ſtates, may have the qua
lities that Chymiſts would have to b
proper to this, or that Principle
than what we have took notice of i
Chymicall Oyles, which do mo
ſtrongly affect the Taſte than the mo
of Salts themſelves are found to d
And to confirme our Doctrine of th
Producibleneſs of Salts by the Auth
rity of *Helmont*, which is very grea
at leaſt with the Chymiſts of his ov
Sect, I ſhall obſerve that he aſſur
us, that by *Paracelſus*'s *Sal circulati*
from ſolid Bodies, among which
particularly, and in the firſt pla
inſtances ſtones, may be tranſmut
into actual Salt Equiponderant to t
body whereof it was made. So th
upon the Chymiſts ſuppoſition, th
in theſe mixt Bodies there is bo
Sulphur and Mercury, beſides a *T*
ra damnata, the ſame portions
matter that preexiſted in the form
of either of thoſe ſimple Ingredien

Vide Helmontium in Tractatu dicto Elementa. no. 11. *& alibi.*

m

nuſt by the operation of the fire, and n Anomalous *Menſtruum* have been urned into Salt; and if the *Helmonti-n* Experiment be allowed of, what-ver becomes of the Chymical ſuppo-ition, we may ſafely conclude, that alt may be made of matter, that was ot ſalt before, and conſequently that alt may be *de Novo* produc'd. And hus much of the poſſible origination of Salts in generall, which I thought fit o premiſe to what I am going to offer about the Production of the Particular ſorts of Salt. Though I have elſewhere enumerated and di-tinguiſhed ſeverall kinds of theſe Bo-dies, whereto Chymiſts have given the Title of *Salts*; yet thoſe that more properly deſerve that name and more directly appertaine to our preſent diſquiſition, ſeem to be chiefly theſe hree: The *Acid*, ſuch as Vinegar, Spirit of Salt &c. the *Alcalizate* or *fix'd Lixiviat* ſalts, made by bur-ning, ſuch as ſalt of Tartar, and of Wormwood, Barillia, Pot-aſhes &c. and the *Volatile* and *Urinous* Salts, ſuch as ſalt of Hartshorne, of Urine, of Blood, of Soot &c. which taſte and

ſmell like that of Urine. Wherefore if we can ſhew, that theſe may be produc'd *de Novo*, or, (which we have intimated to be equivalent for our purpoſe,) *tranſmuted* into one another, we ſhall I hope be thought to have ſucceeded in our preſent Attempt.

I. SEC

I. SECTION.

Of the production of Acid Salts.

AND to begin with *Acid* Salts, we ſee that even *ſweet Wines* will but too often without addition degenerate into ſoure vinegar, which will diſſolve Corall and divers ſtones, calcin'd Lead, and ſeverall other mineralls. The raine water that is imbib'd by the roots of Trees is in thoſe that bear Lemmons and Berberies changed into liquors, abounding with ſaline Corpuſcles, that enable them to affect the Taſte, and act on powdered pearles, and ſeverall other Bodies as Acids are wont to do. Alſo *Guajacum* and divers other woods, that do not at all taſte ſoure, will, being diſtilled in Retorts, afford ſpirits that are furniſhed with ſtore of Acid particles, which, as I have tryed, will hiſs upon *Alcali's*, and will diſſolve Corall, and even lead it ſelfe calcin'd into *Minium*, and make *Saccharum Saturni* of it. Many other vegetable Bodies alſo

do, without addition, afford the like acetous liquors. And if it be objected, that these were preexistent in the Bodies whence they were obtain'd, and were only extricated by the operation of the fire, it will concerne those that affirme this to prove it. (which no body that I have met with hath yet done) and I shall the rather require it, because I find that the sweetest bodies and those of differing kinds, as (to omit, Raisons of the Sun) sugar and honey themselves, afford such a sort of spirits, which the tryalls, I elsewhere mention, shew to be sharp and piercing enough. To which may be added, that in divers cases, where we are sure that *Acid* spirits were plentifull ingredients of compositions, as in *Saccharum Saturni* & that magistery which the Chymists call *Salt* of *Corall*, (which are not the only mixtures I have made tryall of,) experience witnesseth, that the liquor, which comes over by distillation in Retorts, is not *Acid*, but quite of another kind; I would not, by what has been said, be concluded to deny, that Acid Salts *may* in some mixt bo-

dies

dies, be so associated with others, and obscured by them, as not to be discernable by the Taste, till they be seperated by the operation of the fire. But to shew that such Acid Salts *were de facto* preexistent, as acid ones in the Body that affords them, their must be some positive proofe, other than the liquors distill'd from them, since they, as we have already argued, may be not barely *extricated*, but may have their acidity produc'd by the operation of the fire; And wee see, that Salt-Peter, though it have no Acid Taste, may be made to afford by (a certaine way of) distillation, above three quarters of its weight of a highly Acid liquor; and yet it appeares not, that such a great proportion of *Acid particles*, or possibly any considerable proportion at all, was employed by nature in the composition of *Salt-Peter*. At least having distill'd Earth, that I caused in my own presence to be dugg out of a Pigeon house below th Dunge; I had from it a Salt indeed, and some little Saline liquor, but of a nature, as for as I observ'd, very differing from

from that of the Acid Spirit of *Nitre*. (But this Experiment I mention occaſionally without building upon it.)

Nor do I think, it ought to ſeem incredible, that *Acid* Salts, as well as others, ſhould be producible by the various ſplittings, attritions, coalitions and changes of Texture, which may be cauſed ſeverall wayes, and eſpecially by the Operations of the Fire, which moſt active Agent; making a vehement and various agitation of all the Minute parts that a body conſiſts of, may conſonantly to what hath above been intimated, ſplit or breake ſome of them, and as it were grind others againſt one another, and in ſhort, ſo alter their bulke, figure and motions, as to make them fit to ſtabb or cut the tongue, and the other bodies that they worke on, after the manner of thoſe Bodies we call Acid. But of this you may find more in our Notes about the Mechanicall Origine of Taſtes, wherefore I now proceed to the ſecond part of my Taske.

The

The II. SECTION.

Of the production of volatile Salts.

AS to the production of *volatile* Salts, we have an eminent Instance of it in the salt obtainable by distillation from *Soot*, for though the Woods we burn in our Chimneys seem not to have any thing of the taste or smell, of Urinous salt, nor have the dissolutions of the saline parts of such Woods communicated to water by their infusion in it, been observ'd (that I know of) to be of affinity in taste or odour with the salt of *Soot*; yet when Wood is first burnt in the fire, and then the *Soot* afforded by it is duely distill'd and rectifyed in fitly shaped vessels, there is obtained a spirit and a white volatile Salt, that in smell taste and divers operations by which we have examined them, appear to be of great affinity with those of Humane blood, or Urine, and may be easily enough mistaken for them.

But

But this double operation of the fire is not alwayes neceſſary to the production of volatile Salts out of Vegetables; for, though by their diſtillation in Retorts we generally obtaine from them no dry ſalt at all, but a ſowriſh Spirit, with which I have diſſolv'd Corall, Lead, and other hard Bodies, that Urinous ſpirits have not been obſerv'd to worke on, and they will, being put upon Urinous ſalts, make ſuch an hiſſing and conflict, as are look't upon as great tokens of antipathy; yet I remember that ſeverall years agoe, I did from Muſtard ſeed, that had been kept for a convenient time, obtaine by diſtillation a volatile Salt, that faſtned it ſelfe in prettily figured graines to the upper part of the Receiver, and this at the very firſt diſtillation, ſo that there was no need of rectifying the diſtilled matter to ſeparate that Salt. And to enforce this proofe by ſomething more conſiderable than it ſelfe, I ſhall add, that by an eaſy way by word of mouth communicated to me by a very ingenious perſon (Dr. D. E.) one may, out of very many

many vegetables first duely prepared, without adding any thing to them, by bare distillations in Retorts, obtaine good store of volatile spirits and salts, which by their fugacity, colour, smell, taste and divers experiments that I purposely made to examine them, were so like the salt and spirit of Urine, Soot, &c. that one, that knew nothing of the way they were made by, would readily have concluded they belonged to one or other of the newly named sorts of Bodies.

I remember that I have also sometimes produc'd a *Volatile Salt*, that one would readily have pronounced Urinous, of a *Minerall* it selfe; nor was that the onely *fossile* from which Experience perswaded me, that salt of this kind might be obtained.

Some other particulars relating to the production of *Volatile Salts*, I think fit to reserve, till I shall have occasion to mention them in another Section (as Instances of the production of Urinous spirits.) Only there is one thing, that I think not fit here to pretermitt, because I have not met with

with it in any Chymicall writer, the contrary being rather generally taken for granted; I ſhall add then, that it is not univerſally true, that ſaline ſubſtances, that are Volatile and aſcend in the form of ſalt, are of an urinous nature, and enemies to Acids. For I have had from Verdegreaſe diſtilled *per ſe* with a ſtrong fire, a very acid ſpirit which being warily rectify'd, afforded firſt a ſowre phlegm, and then a penetrant ſpirit ſharper than it, leaving behind it in the veſſel ſome few ſpoonfulls of a dark coloured liquor, which being ſett aſide, and ſuffered to reſt, did in a great part, ſhoot into tranſparent Chryſtalls large but thin, almoſt like thoſe of Silver diſſolv'd in *Aqua fortis*: They appeared prettily figured at the edges but were ſo odly connected among themſelves, that I was not able to refer them to any of the known Geometrical figures; and their brittleneſs made them the leſs tractable, but their ſmell which was ſtrangely piercing and not inoffenſive argued them to be of the ſame nature with the Acid ſpirit which had come over with them. But

But there is a more constant and easy way of producing such a Volatile salt, as my observation mention's. For if *Amber* be gradually and warily distill'd it will afford besides the phlegm, spirit and oyle, a dry substance which though the Chymists call the *Volatile salt* of *Amber*, I found to be really of an Acid nature, by several of those tryalls, by which we are wont to discern, that a body belongs to the family of *Acids*.

The

The III. SECTION.

Of the production of Alcali's or Lixiviate Salts.

THe third and laſt ſort of Salts which we are to endeavour t ſhew to be producible, are the *Alcali* or *Fixt Salts*, which ſeeme to hav an Antipathy with *Acid* ones, b making a conflict with them, an exerciſing diverſe operations contrar to their's, (as I have in anoth Diſcourſe more fully declared.)

As for the Origine of theſe Fi Salts of Burnt Bodies, the Spagiriſ are not of the ſame mind about i For, the almoſt univerſall opinion the Chymiſts that preceded *Helmon* and the more common opinion eve of later Chymiſts ſeems to have bee that theſe fixt *Alcalies* are preexiſte in mixt Bodies, and that the fire do but ſeparate or extricate them fro the other parts of the compounde Body. But *Helmont* followed th

Vide Helmontium in Blas humano no. 38. & 43.

that by severall Chymists that dissent from him in other points) has ingeniously conjectur'd, that these Lixivial salts do not preexist in their Alcalizate forme in the Bodies that afford them, but are Productions of the Fire, by whose Violent action a part of the Salt, which in the Concrete is naturally all volatile, lay's hold of some parts of the sulphur of the same Body, and both together are colliquated and fixt into an *Alcali*, which Fixation he somewhere exemplifies by that which happens, when *Salt-Peter* and *Arsenick*, that are both volatile, being exposed to the fire, are by it's operation fluxt and made to fix one another. But though this account be ingenious, yet I doubt, whether it be so cleare and satisfactory, especially since 'tis applyed to *all* fixt *Alcalies*, as the Embracers of it thinke it. For, besides that it may be question'd whether it have yet been well proved (what *Helmont* teaches) that all the Salt of mixt Bodies before their combustion is volatile, it is not declared, what volatile salt is meant,

Vide Blasii humanum. No 41.

though it be plaine, that ſome Bodies that afford a fixt Salt, do abound in Acid ſpirits, as Oake, Box, and many other Vegetables; and others, as Hartshorne, Blood, Urine &c. abound with urinous, that exerciſe hoſtility with Acids. And I have found that from ſome Bodies I could obtaine both *Acid* ſpirits, and ſuch as are wont to be called *Urinous*. 'Tis not eaſy to explaine how the Volatile Salt comes to unite it ſelfe ſo intimately with the oyle (or ſulphur) and though it be alſo volatile it ſelfe to compoſe with it a Body capable of enduring the violence of the Fire, ſince we have more than once tryed, that the Volatile Salt of Urine, or of Hartshorne, and a Chymicall oyle, as of Turpentine or any ſuch, being put together, the Salt will indeed aſſociate to it ſelfe ſome particles of the Oyle, but will nevertheleſs in their company ſublime in the forme of Salt, with a very gentle fire. And the Example, that *Helmont* ſomewhere gives of Arſenick and Nitre do's not ſatisfy me, becauſe that

Vide Helmontium Complex: atque Miſt. &c.

whe

when I made equal parts of those two Bodies to be mingled, and in a strong Crucible fulminated together, a great part of the mixture was driven away by the fire, so little alter'd, that 'tis very dangerous to be too bold with the fumes, and a good part of what remained was fixt only in comparison of the crude Arsenick, but not comparably to Salt of Tartar, or some such other true *Alcali*; and the constancy of the part, that was more fixt, may probably be ascribed to the Salt-peter, which we know will without the help of Arsenick afford a great deal of fixt salt, if about halfe of it be burnt away, by the help of powdered Charcoal, or some other convenient additament. It may also serve to weaken this instance of *Helmont*'s, that there are other instances, in which we may observe, that no such thing happens as his *Hypothesis* may make one expect. For *common Sulphur* is by Chymists said to abound in an Oyly part, upon whose account it is very inflammable, insomuch that they would have other inflammable Bodies to be

ſo, by their participating of Sulphur.
That this concrete alſo abounds in
Salt, is evident, according to their
principles, by the acid *Menſtruum*
afforded by it, that goes under the
abuſive name of *Oleum Sulphuris per*
Campanam. And yet theſe Ingredi-
ents, combin'd by nature, make up
Concrete which is ſo volatile, that
both in cloſe veſſells and the open fire
'tis almoſt totally volatile. And in
that mixture of highly dephlegm'd
ſpirits of Wine and Urine, that *Hel-*
mont calls the *offa alba*, though the
Urinous ſalts do manifeſtly combine
themſelves with the ſpirit of Wine,
which being totally inflammable, the
Chymiſts referr to their oyle, or
ſulphur, yet the coagulated mixture
do's not by this aſſociation of Ingre-
dients grow fixt, but proves very vo-
latile. I will not here urge, in favour
of the common opinion of the Chy-
miſts of the Preexiſtence of *Alcali*
in mixt Bodies, that a Corpuſcularick
may ſay two not inconſiderable things
whereof the *firſt* is, That there is no
need of ſuppoſing a Colliquation of
ſalts with Sulphurs, Oyles, or any
thing

thing elſe to produce fixt ſalts; ſince, beſides that that ſuppoſition do's not explaine, how two volatile bodies come to compoſe one that is fixt, 'tis plaine, that a body yet more fixt may be made without any aſſociation of differing Principles. For the Earth, that together with the *Alcali* remaines in the aſhes of a burnt Body, is more fixt than the *Alcali* it ſelfe, and yet derives not its Fixity from any combination of Elements, or Principles, but from the groſſeneſs, ſolidity, or weight, and unfitneſs for avolation of the Corpuſcles it conſiſts of. And the Corpuſcularian may add in the *ſecond* place, that whereas ſome inſtances are alledg'd wherein there is ſuppoſed a leſſening of the quantity of the fixt *Alcali* of the Concrete, by operations that are ſaid to carry off the volatile ſalt, before the Body comes to be incinerated; It may be anſwered, that perhaps thoſe very operations did but rarefy and volatilize part of the preexiſtent *Alcali*, and ſo left the leſs of it to be recover'd by burning; as the Chymiſts tell us, that Fermentation rarefy's the

oyly parts of the Juice of Grapes, and
ſubtilizes them into vinous ſpirits, and
ſo do's much leſſen the quantity o
the oyle. And when *Wood* is burnt ir
a Chimney, 'tis not in the forme of a
acid ſalt, which is the only that i
commonly obſerv'd to be driven awa
by Diſtillation in cloſe veſſels, but i
that of an Urinous ſalt, (which is
kin to *Alcaly's*, and an Enemy to *A*
cids) that the ſaline part of the woo
is made to aſcend; as may appear b
the Diſtillation of Soot. Such Ar
guments as theſe, a Corpuſcular Phi
loſopher might, as I was ſaying, urg
in favour of the more received Spa
giricall opinions. But inſtead of i
ſiſting on them, I ſhall only invi
you to take notice of what I obſerv
in *Salt-peter*. For, though by diſti
lation or any other way that we y
know, there is no oyle to be ſepar
ted from it; yet above halfe th
body of it may be eaſily and quickl
turn'd into a fixt ſalt, in Colour, Taſt
and Operation, much like that of Ta
tar, and other incinerated Vegetable
And ſuch an *Alcali* I have made wit
out the help of injected Coales or ar

other Body furniſhed with a combuſtible Sulphur; ſo that it ſeems not, at leaſt univerſally true, that to the Production of an *Alcali*, there is neceſſary to be at hand an oyle, or Sulphur to be laid hold on by the volatile ſalt, and fixt together with it. But this Experiment is far more congruous to our Doctrine, which derives all thoſe ſalts from the ſize, ſhape, and ſolidity or weight of the ſaline Corpuſcles, ſince the ſame *Salt-peter*, whoſe greater portion may, by the operations newly mention'd, be reduc'd to a fixt *Alcali*, may, by being diſtill'd with a convenient *Bolus*, have its greater portion brought over in the forme of an Acid ſpirit or ſalt, which it ſelfe may afterwards be made materially to concurr to the Production of an *Alcali*. I might add, that even from one of *Helmonts* own Experiments, my concluſion may be inferr'd, ſince he ſomewhere, and, if I miſtake not, in more places than one, affirmes, that by the addition of more Alcalizate ſalt and the operation of the fire, the Earth it ſelfe that is in the Aſhes may be turned into Salt,

Cinis proprio ſuo Alcali fit Sal merũ. complex. atque miſt. no. 12. Idem Helmontius in Blaſ. humano no. 39. vidcatur.

which if true, argues, that a fixt salt may be made of that which was not before either of saline, or of an oleous nature; and consequently without any such Combination of Salt and Oyle or sulphur, as his *Hypothesis* supposes. From which Experiment I may also inferr the possible Origination of *Alcali's*, by the Mechanicall changes, that without the addition of oyle or sulphur the Operations of the fire may produce in the part of a mixt body; since Earth (excepting water) seems the most indispos'd of any part of the Concrete to be turned into fix Salt.

I must not here pretermitt an observation that I have made, which seems to overthrow the opinion of those learned Chymists, who will have the violence of the fire to be alwayes a necessary Agent, as I allow it to be ordinarily, to the production of a fixt lixivial *Alcali*. I said *seems to overthrow* because I had not the opportunity to repeat my tryalls, and am not sure, that the Salt I employed was altogether genuine, in regard I can

not

not here in *London* meet with it, at any Rate; but I have great cause to thinke it was right, both for other reasons and because it was sent with other things, for a present out of the East, to an inquisitive Noble Man, who had been lately Ambassador for his *Brittish* Majestie at the *Ottoman* Court, and who was pleased as a rarity to present it me.

This *Salt* was affirmed to be the true *Egyptian* Nitre, mentioned so much by Ancient Writers: and indeed I found it to agree much better with the Notion, that books had given me of it, than with that sort, to which Chymists generally give the name of Nitre, and which is indeed the only Nitre, to be usually met with in our *European* shops: where it is best known by the vulgarly received name of *Salt-Petre.* But to say something of our *Egyptian* Nitre, though it be not pertinent to mention here all that I observ'd about it, yet I must not here omit two things, that I made tryall of, with that little, which escaped the misfortune that lost me all the rest,

that

that ſeem conſiderable in the preſent occaſion.

The firſt whereof is, that this *Nilotick* Salt was very apt to imbibe the moiſt aire, as calcined Tartar, and other fixt *Alcali*'s are wont to be, to which reſolution we do not find our Salt-peter, if it be unmixt, diſpos'd. But the other & more important thing I obſerved, was this, that having upon this *Egyptian* Niter, Crude as it was, poured ſpirit of Salt, this Acid liquor did preſently, even in the cold, worke briskely upon it, as if it were a fixt *Alcali*, or at leaſt abounded with ſuch a lixivial Salt. And here upon the By, give me leave to take notice of a text of the holy Scripture, that has ſometimes puzzled not only me, but far better Criticks in the *Hebrew* tongue then I. And it is a Paſſage to be found in the 25. *Chap.* of *Solomons Proverbs*, where to illuſtrate Things very incongruous to one another, the diſagreement of Vinegar and Nitre is mentioned, for ſuppoſing the words to be rightly tranſlated, as beſides the Authority of

fI know not how many versions, the very sound of the *Hebrew* word *Næter* or *Nathar* argues it to be, it seems very hard to find what show of Antipathy there is between Vinegar, and the *Salt-peter* that is commonly sold in our shops for Niter; wherefore strongly presuming that *Solomon*, who raigned in *Judæa*, a country near to *Egypt*, and had much commerce with the *Egyptians*, whose Kings daughter he had marryed, made use of *Egyptian* Nitre as the best known, if not the only in his time and Country, and might have found in this Nitre, some quality very differing from any we find in our Salt-peter; as I remember that in the Prophet *Jeremy* Niter is mentioned, as a very abstersive thing, and fit to cleanse Womens skins, which is a knowne vertue of our fixt *Alcaly's*, but not observed in pure Salt-peter; wherefore when once I receiv'd the Niter that I have mentioned, and saw in it signes of an Alcalizate nature, I quickly poured upon it some strong Vinegar, and found as I expected that there presently ensued a manifest conflict, with noise, and store of bubbles, with

Jer. 2. 22.

with which Experiment I afterward acquainted ſome Criticks, and othe learned men who were not ill pleaſe with it. But this Theologicall uſe o the Alcalizate nature of Niter, no being that which I chiefly mentione it for, I ſhall now make the Philoſo phicall uſe I intended, by takin notice that *Egyptian* Niter being ac knowledged to be a Native Salt, an made only by the Evaporation of th ſuperfluous water of the *Nile* (o ſome other ſuch liquor) is yet of lixiviate nature, or at leaſt abound with particles that are ſo: Though a I freſhly intimated, it was produce without any precedent Incineration and the matter of it ſuffer'd not, o at leaſt needed not ſuffer any vio lence of the fire, to make it afford a *Alcali.*

I have repreſented theſe things not for that I pretend to be ſure tha *Alcaly's* may not be produc'd in mul titudes of mixt Bodies, eſpecially in a good number of Vegetables, after the way propoſed by *Helmont*, or by ſome ſuch like: But *partly*, becauſe it ſeems not alwaies neceſſary to the exiſtence

of

of an *Alcali* in Nature, a[illegible] to be the only way it can be produced by; and *partly* becauſe I would give you and your Chymical friends occaſion to cleare (as far as they can) and confirme the doctrine I have queſtioned. Tis true that being a far greater friend to Truth, than an Enemy to the Chymicall *Hypotheſis*, I would not ſtifle what may ſerve to advance that, in favour of *Helmonts* doctrine, though this would never ſo well accommodate my preſent argument. But I have no great temptation to ſurmount in this caſe, for it concerns very little the maine ſcope of this diſcourſe, whether *Helmonts* way or any other, of the production of *Alcaly's* be embraced, ſince it will ſuffice for my purpoſe, if ſome Bodies belonging to this family, or kind of Salts may be *produc'd*; I ſay *ſome*, becauſe (as I have already intimated) I will not peremptorily aſſert, that all fixt *Alcaly's* are productions of the fire, or made by the help of it; though I do not readily remember, that I have met with any (except *Egyptian* Niter) that are not. But I ſhall wave that queſtion,

queſtion, becauſe my intended bre vity calls upon me to proceed t the mention of ſome particular in ſtances, fit to perſwade us, of th produciblenefs of ſome *Alcalizat* Salts.

'Tis known that Chymiſts gene rally looke upon *Spirit of Nitre* an *Aqua fortis*, as Liquors containin not *Alcali's* but *Acid* Salts, whic they conclude not only from th Taſte but from the great ebullitio that is made, when thoſe liquo are poured on the Salt of Tarta fixt Nitre, Pot-aſhes, or other ſuc unqueſtion'd *Alcali's*. That Sea-ſa likewiſe do's not containe *Alcali's* is generally taken notice of; th ſpirit of it being juſtly reckon'd a mong the Acid ones, and when purpoſely examined that Concret by Diſtillation, the remaining Sal though the fire had been violent was very differing from *Alcalie*. And yet my conjectures inclining m to ſuſpect what the event woul prove, I ſeverall times made the fol lowing Experiment upon Sea-ſalt that yet retain'd all its acid ſpirit in i

Upo

Upon well dryed and powdered a-falt we put into a Retort ſome-nes an equall, and ſometimes (which ›referr) a double weight of good irit of Nitre, or *Aqua fortis*, and ıfurely diſtilling all that would come ver, we took out the dry ſalt re-aining at the bottom, which we und much chang'd, both as to colour, a good part of it being uſually very ddiſh) and as to taſte, which was ffering enough from what it had een before, and might probably ıve been made much more ſo, if eſh ſpirit of Nitre had been once or vice more abſtracted from it. This ılt being againe powder'd (for 'twas ı a lump when taken out) and put ıto a Crucible, plac'd in a convenient re, was by the repeated injection of ragments and well kindled Charcoal ıade to flaſh divers times almoſt like ıelted Nitre; and when it would flaſh o longer, the remaining matter be-ng taken out did in great part ap-›eare to be brought to an Alcali-ate Nature, for it had a fiery aſte upon the tongue: if Spirit of Vitre or *Aqua fortis* were poured on it,

it, it would make an Ebullition, i
would turne Syrup of Violets green
and in ſhort, exhibit diverſe *Pha*
nomena of Alcalizate Salts.

Another way there is like tha
mention'd of making an *Alcali* out c
Nitre, which is thus done; Pour
upon it an equall weight, or half
the weight of ſtronge oyle of V
triol, and having diluted the mix
ture with a convenient proportio
of faire water, diſtill it by degree
till there remaine a ſubſtance very dry
powder This, and mix it well wit
about an eighth part of beaten Cha
coal, keep them in fuſion in a ſtrong
and cover'd Crucible, till the ma
grow very blacke, and a little of i
being taken out with a wire, taſt
fiery upon the tongue, (which ma
happen in about halfe an houre
an houre according to the quantit
of matter and degree of Fire) The
take out the blackeſt or deeply re
mixture, which will very eaſily in
bibe the moiſture of the Aire, an
you may finde it, at leaſt whil
'tis hot and dry, of a more fiery Li
vial Taſte than Salt of Tartar
ſelf

ſelfe. It will make an Ebullition with Acid ſpirits, and precipitate diverſe ſolutions made with them, it will turne Syrup of violets green, and in ſhort diſcover it ſelfe many wayes to be of an Alcalizate nature, though it be aſſociated with a Sulphur, that may by diverſe methods be made appeare to be contained plentifully in it.

It is alſo conſiderable on this occaſion, how the ſame Body, without the addition of any other Salt, may, by the various manner of the fires application to it, be made to afford, either little elſe than Acid Salt's, or a leſſer or greater quantity of *Alcali*: For, if fine Salt-peter be dexterouſly diſtill'd with about thrice it's weight of ſome fit Earth, (but not as is uſuall, with powder'd Bricks,) it will ſometimes afford very near as much Spirit of Nitre as the Salt weighed, and though this like other liquors, be not without phlegmatick parts, yet beſides that it may be doubted, whether moſt or many of them were not produc'd by the tranſmuting operation of the fire;

we may ſuppoſe, that five parts of ſix, or ſix of ſeven have been diſtill'd into dephlegm'd ſpirit.

But if according to the way I have * elſewhere circumſtantially delivered, (which is by frequent injecting into flux'd Salt-peter, ſmall peices of kindled Charcoal, till one can make it flaſh no more at all,) you make fix'd Nitre, you may obtaine from Nitre thus handled halfe it's weight and perhaps better, of an *Alcalizate* Salt, that many would by it's taſte and operations gueſs to be Salt of Tartar.

**In the Eſſay of the differing parts and Redintegration of Nitre.*

But to ſhew yet further how much the Production of this *Alcal.* depends upon the operation of the fire, which as 'tis variouſlly applyed may vary the Texture of the Salt-peter, my Conjectures led me to try the following Experiment which I did with ſucceſs from the beginning; We tooke a pound o good Salt-peter, which was bu groſly beaten (for it ſhould not b finely powder'd) and having lai it on a Conical heap upon a flat tile, that the aire might on all ſides hav acce

acceſs to it, wee Cauſed the upper part of it to be kindled by a little fragment of burning coal (which may be afterward thrown away:) then we cauſed the Laborant with an iron rod dexterouſly to ſtirr the kindled part of the Nitre; that the ignition might be preſently communicated to as many parts of the Salt, as was poſſible; and this nimble ſtirring of the Maſs, that the fire might be more diffuſed, and more parts might be obverted to the Aire, we cauſed him to continue to the end of the operation: by which method within few minutes, we obtained, more than once, out of 16. ounces of Salt-peter, about 10. ounces or better of fixed Nitre, very lixivial in taſte and operation; and for the colour it was of a pleaſant greeniſh blew, and deeper than Salt of Tartar will uſually be brought to, by being (in a Crucible,) kept twenty times as long, in a good fire.

The other ſcopes and uſes defin'd in this new and quicke way of making the *Alcali of Nitre* belong to another diſcourſe, the Experiment,

which will ſcarce ſucceed without adeuterous management, being here mentioned to ſhew, what quantity of Alcalizate ſalt may by a differing operation of the fire, be obtain'd from Nitre; which (crude Nitre) in diſtillation skillfully made for the purpoſe, may be in great part driven over, in the forme of Acid ſpirit, and Phlegme, and leaves ſo little true *Alcali* behind it, that I have wondered at it, being ſometimes ſcarce able to find any at all, though I purpoſely tryed to ſeperate it from the Tobacco-pipe clay, which the Peter had been mix'd with after a diſtillation, wherein not halfe of the Salt had been driven into the Receiver, in the forme of ſpirit.

And to ſhew, that to make the fixed Salt of Nitre, the Actual inflammation of it, in the open aire, is not neceſſary, as very learned Men have ſuppoſed; and that 'tis poſſible, whatever is preſum'd to the contrary, to make an *Alcali* of Nitre, though charcoal, or ſome other combuſtible Body be not added to it,

it, to kindle the Corpuſcles of the Nitre by its ſulphur, and by the aſſociation of ſome part of the ſame Sulphur with the ſaline parts of the Nitre, to compoſe an *Alcali*; to ſhew this, I ſay, I more than once made the following experiment: With a convenient quantity of good Salt-peter we carefully mingled about an eighth part of tobacco-pipe clay, and putting the mixture into a Crucible cloſely luted at the top, we kept it by a fitly graduated fire, in fuſion for ſome houres, and found as we expected, that the remaining ſalt, (for part would get through the lute, or Commiſſures in the forme of fumes) was turned into an *Alcali*, of a faire blew colour, like the better ſort of that fixed Nitre, which is made with Charcoal. This Experiment and that formerly made with Tobacco-pipe clay, ſeem plainly to argue, that to the making of fix'd Nitre, which is confeſſ'd to be an *Alcali*, a congruous change of Texture may ſuffice, whether that change be attempted to bee made in open veſſells, or in cloſe ones, with, or

without the addition of the ſulphur of Charcoal, or any other ſuch combuſtible Body. Upon the ſame ground, that I had for trying the former Experiment, I attempted, and not without ſucceſs, to make an *Alcali* of Salt-peter, by Colliquating moderate quantities of it, ſeverall wayes, (and keeping it in fuſion) with ſome Metalls: I ſay, *moderate quantities of Nitre*, becauſe an Ingenious Gentleman, to home I communicated this Practiſe, could not make it ſucceed in any conſiderable quantities. And to obviate the ſuſpition, though perhaps groundleſs that ſome Chymiſts might have of the material concurrence of a good portion of the combuſtible ſulphur preſumed to be in the Ignobler metalls to the Production of the Nitrous *Alcali*; I ſhall add, that our Experiment ſucceeded, when we tryed it more than once, with more than ordinarily fine ſilver, whoſe Sulphur, if it have any, is granted to be fixt or incumbuſtible. And I remember the laſt Tryalls afforded us a blewiſh *Alcali*, though there were emplo-

e

ed but a fifth part of ſilver, in reference to the Nitre; and though the fire (which was continued for ſome houres) was ſo moderate, that the Metall, though thinly laminated, was not melted. And of an ounce, that was put in, there wanted but foure graines, which ſmall oſs might eaſily be imputed to diverſe accidents.

After what is ſaid of the Production of *Lixiviate Salts* and *Alcali*'s, it will not be impertinent to add, that as they may, by the operation of the Fire, be produc'd, ſo by the operation of the fire, they may be deſtroyed or diſpoil'd of their Alcalizate forme, and turn'd into a ſubſtance of a Nobler nature. This I am induc'd to thinke very probable, by ſome Experiments, among'ſt which that which ſeem'd the moſt conſiderable was this: We tooke a pretty quantity of good ſalt of Tartar, that had been purifyed by ſolution and coagulation, and having put it into a Cleane Crucible, we kept it in a ſtrong Fire (that made the Crucible red hot) for a good while; then giving

it at length a ſtronger fire, we poured it or (afterwards) tooke it out of the pot, and diſſolved againe as much of it as we could in cold water, which being ſet to run through Cap-paper, there appeared, as I foreſaw, in the filter a pretty deal of Matter, that would not (as the whole Salt had done at firſt) be diſſolved in the water, but was turned into a kind of earthy Subſtance. Then coagulating againe the ſolution that had paſſed through the filter, into dry Salt; we expoſed it againe in the Crucible to a ſtrong fire, and putting it againe into water, we perceived it would not totally diſſolve, but left in the filter a ſlime or mudd. And in this manner we proceeded to ignite, diſſolve, filter and coagulate the ſame ſalt of Tartar many times, for, if I much miſtake not, it was 16 times, and ſtill found ſuch an earthy ſubſtance as hath been ſpoken of remaining in the filter and the reſt of the Salt of Tartar ſo little alter'd, that being ſomewhat tyred and other wayes diverted, I deſiſted from proſecuting the operation th

he uttermoſt, concluding it highly probable, that the remaining Salt, might by the ſame way of management be brought to yeild more and more, of that ſame ſubſtance, which either was earth, or of kin to it, being at leaſt ſomewhat that was of a nature very differing from Salt of Tartar, ſince it was not like it, fiery on the tongue, and was indiſſoluble in water, as Earth, but not Salt of Tartar, is knowne to be.

The

The IV. SECTION.

IT may bring ſome illuſtration and add ſome probability to what has been diſcours'd about the *producibleneſs of ſalts*; if we conſider what happens in the Compoſitions and Decompoſitions of ſaline particles and their operations on other bodies and on one another. For if it appear that by theſe manifeſt and Mechanical wayes, ſuch Alterations may be made and ſuch qualities produc'd as are either altogether or very near as conſiderable, as thoſe which diſcriminate the ſeveral families of *Salts* formerly ſpoken of from one another, and form this or that Chymical principle; it will, I preſume, be judged the more credible, that theſe families of *Salts* may be either tranſmuted into one another, or otherwiſe *produc'd*, and ſo may not be Primordial and Immutable beings in the ſenſe wherein the Chymiſts would have them to be ſuch. I have elſwhere taken notice of the Production of Vitriols

itriols, sal Armoniac, Borax, and verse other factitious salts, for hich reason, I shal not insist on iem here, the rather because it may ffice for my present purpose, to ke notice of two *Salts*, whereof ie one is meerly factitious, and the ther such in great part, and yet ach of these by a very slight and ase way of ordering it, afforded ie differing saline Concretions, some f which resembled a Salt which any judg the most simple and natu- al that we yet know of.

In the Essay of the usefulness of Chymistry to the Empire of Man.

To show then, that common *salt* t self that seems the most primitive nd simple amongst gross and visible alts may be produc'd by a change of Texture made in body's very differing from common Salt, I shall recite n experiment which though it have ometimes failed me, yet it has di- ers times answered my desire, though shall now relate but that single one of my last tryals that succeeded best.

That which our *English* Glassmen call *sandever*, and the *French*, of whom probably the name was borrowed, *suindever*

Juindever, and is you know that recre
ment that is made when the materials c
Glaſs, namely *ſand* and *a fixt lixiviate A*
cali, having been firſt baked together
and then kept long in fuſion, the mixtur
caſts up the ſuperfluous ſalt, whic
the work-men afterwards take o
with Ladles, and lay by as litt
worth: This Salt ſeldome uſed b
Mineraliſts and ſcarce wont to b
mentioned by the writers of Courſe
of Chymiſtry, I have thought fit
to employ about ſeveral purpoſes
invited thereto by conſidering th
uſual way wherein it is produced
For in *ſandever* we have a Salt whic
was once altogether Lixiviate, bu
which having been kept long melte
in a ſtronge fire with ſand (or flint
or pebbles) muſt have had its ſaline
corpuſcles variouſly and forcibly
ground or rubb'd againſt another, anc
againſt the particles of the ſand,
ſome of which it may alſo have
diſſolved and retained with it, by
which rude juſtlings and mutual At-
tritions, I thought it very Probable,
that the *Alcali* muſt not only have
been conſiderably altered, but vari-
ouſly

ufly too, ſome parts being changed
ore and after a differing manner than
hers, by which means *ſandever*
ay conſiſt of portions differingly
ualify'd both in reference to the
xiviate ſalt that was at firſt employ'd
id to one Another.

We took a pretty quantity of good
ndever, and having diſſolved it in
ir water, and filtered it, we ſet it
) evaporate in a digeſtive furnace,
ll a ſaline cruſt, as if it were a
in plate of Ice, ſpread it ſelf upon
ie top of the liquor, then ſuffering
to cool and chryſtallize, we broke
e mentioned cover to come at the
hryſtalls, and ſet the liquor we had
:ured off from them to evaporate
rther and ſhoot again: and in this
lethod we proceeded whileſt we judg-
l worth while to do ſo; by this means
e obtained good ſtore of Chryſtalls,
hoſe figures were not the ſam, but ma-
y of them differing enough, though
oſt of them tranſparent and prettily
ap'd, as if nature had at once affected
riety in their figuration & yet confin'd
r ſelf to Geometrize; but the chief
ing for which I mention this ex-
periment,

periment, is, by this way of pr
ceeding, I more than once obtain'
(not on the Very ſurface of th
water, as is uſual in the concretio
of ſea-ſalt) but in other parts, an
Chiefly beneath the ſurface of theSalir
plate formerly mentioned, a conſid
rable number of grains of Salt, that be
ter anſwered to the deſcription ofCon
mon ſalt, than diſſolved and filter'd ſe
ſalt it ſelf is wont to do; forthese grai
that were of no deſpicable bigneſs we
as like little Cubs or die's, as if they ha
been made by a skilful Jeweller, and the
Surfaces had a ſmoothneſs & gloſine
much ſurpaſſing whatever I had obſe
ved in Maine or CommonSalt.

I may confirm the difference
have mentioned to be between *Sa*
dever and Common *Alcali's*, if I he
add that ſome while ago having ſet
good quantity of filtered ſolution
ſandever to coagulate in a cool place,
thereby brought a great part of the ſa
to coagulate into Chryſtalls, almo
like thoſe of Nitre, but ſo very Diaph
nous that divers of them were clear
roch chryſtall it ſelfe; I did not obſerv
them to relent by the moiſture

ie Aire in along time, though the
laſs they were kept in were neg-
gently enough covered with paper
nly, which argues their Texture
have been remote enough from
iat which is proper to *Alcali's*.
nd to ſhew that they were alſo
ilts of a peculiar nature, I ſhall
irther obſerve, that if they were
xpos'd though but to a gentle heat,
ney would in no long time looſe
ieir Tranſparency, and be reduc'd
) a white and fine *Calx*, which
eing weighed and rediſſolved in wa-
r, and made again to Chryſtallize,
ould be Diaphanous, and conco-
gulate with it ſelf ſo much of the
ater, as ſuffic'd to give a very no-
hle increaſe of the weight

Sandever, which afforded me the
rſt of the two Inſtances I promiſed
ou of the Production of ſalts, is one
f thoſe body's that many would
eckon amongſt thoſe that are al-
moſt meerly Artificial. I ſhall now
ention a ſecond inſtance of a body
herein Art ſeems to have little to do
ive the eaſy extrication of its par-
cles, from thoſe wherewith nature

had

had blended it in a Humane body
If then *Mans urine* after having bee
kept ſome weeks in a clos'd veſſe
be expoſed to a moderate fire, firſ
it will yield a ſpirit and a Volatil
ſalt, and then a very copious phlegm
which being totally exhal'd ther
will remain a dry *Caput mortuum*, an
this being warily calcined, diſſolve
in water, and coagulated, if th
Experiment ſucceed with you as
did with me, you will find the Sa
very different from a common L
xiviate *Alcali*, rather you will fin
ſaline Concretions of differin
formes, if not kinds; for I obſe
ved ſome to be oblong and to loo
like ſmall Chryſtalls of Nitre, othe
to be of figures reſembling thoſe
that Geometricians call *Rhombus*
or *Rhomboides*; and one of the fai
eſt of theſe Lozenges, I remembe
for tryall ſake, I kept for many day
expos'd to the aire, and that in wi
ter, without finding it run *per dil
quium*, as a peice of Common *Alca*
of that bigneſs would have done,
a litle part of that time. But beſid
thoſe numerous ſaline concretions th

I could not eaſily reduce to any known figure, there was, which I chiefly expected and would have you take notice of) a conſiderable number of fine grains that lookt like common ſalt, and were indeed more exactly cubicall in their figure, than the grains of ſea-ſalt themſelves are wont to be; And I have the leſs cauſe to doubt that the ſea-ſalt abounding in our *Caput mortuum* was not a common lixiviate *Alcali*, but conſiſted of parts of other natures, eſpecially of ſuch as compos'd ſea-ſalt, becauſe I obſerved, that the *Caput mortuum* when expos'd to calcination began early to melt in the fire, before it was near calcin'd, as not an *Alcali* but ſea-ſalt would have done; alſo becauſe the taſte was much nearer to that of brine than to that of *Lixivium*; and becauſe laſtly it would make no conflict with the ſpirit of ſalt, as an *Alcali* would have done, but did make of a ſolution of ſilver in *Aqua fortis* a white precipitate like that we make of that metal with ſea-ſalt, but not with *Alcali's*.

And becauſe a miſchance unſeaſonably de-

deprived me of the *caput mortuum* of domeſtick Urine prepared in my own Laboratory, I was fain to procure a ſupply of fixt ſalt of Urine made by a diligent Spagiriſt of my acquaintance, who had wrought much upon that liquor; and having diſſolved and filtered a pretty quantity of this ſalt, and ſuffered the ſolution to evaporate ſlowly, till it began to have a skin, I found the Chryſtals it afforded in a cool place to be ſome of them an Inch or two long, and ſhap'd almoſt like Chryſtalls of Nitre, ſave that they were ſharper at both ends, and to many of them were faſtened ſtore of minute and oblong Chryſtalls prettily ſhap'd, which were placed almoſt perpendicularly upon the greater portions of ſalt which by this means obtained a ſhape not much unlike that which the *French* Engineer's call *cheval de friſe:* these Chryſtalls as they did not reſemble common *Alcali's* in there figures, ſo they were unlike to them in divers other reſpects. For though ſome oyle of Tartar *per diliquium* being poured upon ſome of them, there enſued no manifeſt

manifeſt commotion, as is wont to be produc'd when that liquor is mixt with a ſalt, where an Acid is predominant, yet being beaten and mixt with an Acid ſpirit as that of Common ſalt, they made not the leaſt ebullition or conflict, though they were ſtirred up and down to excite it, nor did *aqua fortis*, good enough to be worthy of that name, produce any hiſſing noiſe or froth when it was put upon the ſalt of Urine, though at length it diſſolved a good proportion of it. And though ſtrong oyle of Vitriol being put upon ſome of the forementioned Chryſtalls, did readily work upon them and in corroding them excite a good number of bubbles, yet that did not ſurpriſe me, nor make me conclude the ſalt to be Alcalizate, becauſe I have obſerved oyle of Vitriol (the not ſpirit of ſalt or *Aqua fortis*) to work after the like manner upon common ſalt, of which that the fixt ſalt of Urine did participate I judge very probable, *partly* upon the account of the *Phænomenon* newly recited, *partly* becauſe I found that by impregnating

good *Aqua fortis* with a competent quantity of the fixt ſalt inſtead of diſſolving in it ſea-ſalt, I could make it capable of corroding foliated Gold, even in the Cold; and *partly* alſo, becauſe that ſome part of the ſolution of our fixt ſalt, that was more ſlowly coagulable, being mixt with oyle of Tartar, preſently grew thick and muddy, and ſoon after let fall a precipitate copious enough: And another part of the ſame ſolution did readily precipitate Silver diſſolved in *aqua fortis*, but would not ſo much as diſcolour a ſtronge ſolution of ſublimate, (made in fair water from which a common Lixiviate *Alcali* would have immediately ſtruck down an Orange coloured powder.

A light ſuſpition I once had that the common ſalt, that moſt men eat to ſeaſon their Aliments, may in ſome degree impregnate *Mens Urine*, gave me the Curioſity to examine that of *Horſes*, which I found to require rather a ſhorter than a longer putrefaction than Humane Urine to make it fit for diſtillation; but the *Caput Mortuum* of this alſo, I was by an accident

accident hindered to examine sufficiently, but by the spirit and Volatile salt the liquor after putrefaction easily afforded, it seem'd probable enough, that the fixt salt would have been not unlike that of *Mens Urine*; of which last nam'd olid and despicable liquor I chose to make an Instance in this place, because Chymists are not wont to care for extracting the fixt salt of it, (which is therefore commonly presumed to be like other *Alcali's*) but as soon as they have distill'd the saline spirits, throw away all the rest as nothing worth: which practice, as generall as it is, I cannot commend, for though I am not altogether of *Helmonts* mind, where he saies, that *Wisdom despises those that dispise the investigation of Urine, and refuse by the fire to search out its Contents*; yet I think that those who understand the mystical writings of some of the best Chymicall Philosophers of former times, will look upon it as a more tolerable *Hyperbole*, than other Men or even Vulgar Chymists imagine it to be.

The Second Part.

Of the Producibleneſs of Spirits.

The I. SECTION.

Of the Production of Vinous Spirit

AS for what the Chymiſts call *Spirit*, they apply the Name to many differing things, that this various and ambiguous Uſe of the *Word* ſeemes to me no meane proof, that they have no cleare and ſettled Notion of the *Thing*. Moſt of them are indeed wont in the generall, to give the name of *Spirit* to any diſtill'd Volatile liquor that is not inſipid, that is *Phlegme*, or inflammable, as *Oyl*. But under this generall Terme they comprehend liquors, that are not only of a differing, but muſt be, according to their Principles, of a quite contrary nature; ſome of them being *Acid*, as Spirit of Nitre, of Salt, and of Vineg

t ſelfe; and ſome of them *Urinous*, or, as ſome would have it, *Volatile Alcali's*, which are ſuch Enemies to he former, that, as ſoon as they are ut together in due proportions, they umultuate and grow hot, and uſually ontinue to fight till they have diſarm-d or mortifyed each other. Beſides heſe two Hoſtile Families of Spirits, here is a third ſort, which they call *Vinous* or *inflammable*, which though ery ſubtile and penetrant, is not anifeſtly either Acid, or Alcalizate; ſay, *manifeſtly*, becauſe the Taſte nd ſmell of this ſort of Spirit is differ-ng from both the ſorts laſt named; nd yet is referr'd to one, or the o-her of them, by ſome Learned Spa-iriſts; with whom I neither need, or deſire to diſpute about this matter; nce it may ſuffice for my purpoſe, fit can be made out, that all the three orts of Spirits above mentioned, the *Vinous* or *inflammable*, the *Urinous* or *Alcalizate*, and the *Acid* may be pro-uced, and conſequently may be other han Primevall bodies.

And to begin with the firſt named, heſe *Vinous* Spirits are ſo producible

by Art, that we ſeldome find them produced by nature alone, which does indeed make the Juice of Grapes, but does not make wine, nor the Spirit of wine, unleſs, by the help of Man, that juice be preſs'd out and fermented. And the caſe is yet more plaine in the ardent Spirits made of Ale, Beere, and in the like vinous ſpirits made by the decoction and fermenting the ſeeds and other parts of Vegetables. And 'tis obſervable to our purpoſe, that *Muſt* (or the Juice of grapes newly preſs'd out) does not in diſtillation yeild a Vinous and inflammable Spirit. And I remember, I had once the pleaſure to laugh at a Man, otherwiſe very ingenious, who, to catch the ſubtile Vinous Spirit that he would have no thinke was loſt in the common way of handling wort, made it worke in a huge Copper Limbeck, to catch the Spirituous parts that he thought would otherwiſe fly away; by which meanes, inſtead of the ardent ſpirit he expected, he got nothing in his Receiver but a nauſeous Phlegm. I have alſo found by Tryall, that Raiſons

(whi

which we know are but dryed grapes) being distill'd alone afforded an *Acid* and Empyreumaticall, but not a vinous Spirit, whereas, when I carefully fermented them with a due proportion of water, they would afford me in distillation an ardent spirit like that of wine.

If it be objected, as I presume it will, that the Vinous and inflammable Spirit, that is by fermentation obtained from body's, was actually in them before, and is only extricated by Fermentation, I answer, that this is *Gratis dictum*, and is therefore not to be admitted till it be proved; since Raisons, and such other Fermentable body's do not, upon the supposed *Analysis* made by Distillation, afford a Vinous Spirit, but one that is very differing from it. And I see not, why the change of Texture may not turn some part of the Juice of Grapes, into a Vinous and inflammable liquor, since a little further change is able to turne the same Juice into a liquor that is *Acid*, and neither Vinous nor inflammable, as 'twas before. And I have found by

by tryall, that even this Vinegar ; crude as it is, being Satiated with *Calx of Lead* made *per ſe*, would afford a Spirit not acid, but of a very differing Taſte, and inflammable, like the ſpirituous parts of wine. And if it ſhould be further objected, that theſe inflammable Spirits were not produced by theſe operations, but, preexiſting in the newly expreſs'd juice of Grapes, were only extricated by Fermentation, and being afterwards cover'd or diſguis'd by the acid particles of the Vinegar, were againe extricated by diſtillation, the Acid ſalts having fixt themſelves upon the Lead they corroded, and thereby given the Spirits leave to forſake them: If I ſay, this be objected, I might referr you to a more full anſwer that I have elſewhere given. And at preſent it may ſerve the turne, that I put you in mind againe, that the Objection alledges no *Phænomena* to make appeare the actuall pre-exiſtence of vinous ſpirits, either in the juice of Grapes, or in the ſolution of Lead.

And though I need but deny what is barely affirmed, not proved; yet to

o examine this matter further than had found others to have done, did (as I elsewhere mention) nake a *Saccharum Saturni* with an Acid liquor made without Fermentation, or the Addition of any liquor, from Wood it selfe; and then, listilling it also without any Addiament, I had, (as I expected) a Spirit that readily took fire and burn't tway in a blew flame, like that of Spirit of Wine. I know another Objection may be framed from the doctrine of some Chymists, who would have Spirit of Wine to consist of the oyly parts of the juice of grapes rarefyed and subtilized. But with these learned Men (for such I know some of them to be) I have not here any need to enter into a dispute, since, without examining whether their opinion be true or no, if it be admitted, it will be consistent enough with mine. For to say, that by subtiliation, rarefaction, a peculiar kind of Commixture with the Phlegm, or the like meanes, the oyle contained in the Juice of Grapes, (and seperable from it, in the forme of Oyle, if

it

it be diſtill'd before it be fermented;) becomes ſpirit of Wine, is but to aſſigne the *Modus* whereby Vinous Spirits are produced, but not to deny there Production. And all that my purpoſe requires, is that it be proved or granted, that inflammable Spirits are really produced, by what way ſoever they come to be ſo. I ſhall add, that though experience Witneſſes, that Honey being skillfully fermented with a due proportion of water will yeild a greater plenty of inflammable Spirit than the Wine it ſelfe, that is made in diverſe Countries yet when we have carefully diſtill'd Honey before fermentation, it afforded us a great proportion of conſiderably acid Spirit, that would diſſolve ſome Metalls, but ſo little oil that the paucity ſeemed ſtrange, and made it appear unlikely enough, that ſo inconſiderable a proportion of that liquor, ſhould be rarefiable into ſo much ardent ſpirit, as may be obtain'd from well fermented Honey.

The

The II. SECTION.

Of the Production of Urinous Spirits.

I Proceed now to the other ſort of Spirits, as thoſe of Hartſhorne, Blood, Sal-Armoniac, ſoot, of wood &c. That we have formerly call'd *Urinous*, becauſe of their great affinity in many Qualities, to the more familiarly known liquor, *Spirit of Urine.* But as for theſe, I know not, whether it will be neceſſary to treat of their Origine apart; ſince, for ought Experience has yet aſſured me, theſe Spirits are not ſimple but compounded bodyes, conſiſting of the Volatile ſalt of the Concrete that afforded them, diſſolv'd in the Phlegm, and for the moſt part accompanyed with ſome little oil, at firſt undiſcerned by the Eye though afterwards it grow Viſible. The preſence of this Oil in moſt Spirits, belonging to this family, may be probably argued from the deep Tincture

ćture that in proceſſe of time, ſpiri
of Hartſ-horne, of Blood, and di
verſe other ſubjects, will acquire b
ſtanding, though preſently after thei
diſtillation, and Firſt or ſecond Re
ćtification, they were cleare, an
colourleſs as water: The oily portion
which, whils't 'twas in very minute par
ticles, lay conceal'd in the mixtur
becoming diſcoverable in proceſſe o
time by their extricating themſelve
a little, and aſſociating, though no
ſo farr as to emerge and flote, ye
far enough to diſcloſe themſelves b
the colour they give the liquor. Bu
in Spirit drawn by the help of a
Alcali from *Sal-Armoniac*, a Concret
not abounding in oily parts, lik
Hartſ-horne, blood &c. kept not onl
for many months, but diverſe yeares,
obſerved no ſuch diſcolouration, whic
was one inducement to make me
in ſpeaking of the Oleaginouſneſs o
Urinous Spirits, to employ the wor
moſt rather than the word *all*.

Having therefore hitherto by Recti
fications and Digeſtions obſerved no
thing in theſe *Urinous Spirits* but
Chriſtalline *Volatile Salt*, moſt com
monly

only ſeperable in a dry forme, and
ıe *Phlegm* it was diſſolved in, beſides
me *Oleaginous Particles* that had
though at firſt unperceivedly) aſſo-
ated themſelves to it; I ſee no great
:ed to trouble you, with particular
ıſtances about this ſort of Spiritu-
ıs liquors; what has been ſaid,
aking it allowable for me to referre
ɔu, to what I deliver about the
roduction of Salts, where that of
olatile ones is mention'd.

The

The III. SECTION.

Of the Production of Acid Spirits.

AS for *Acid Spirits* that ſome them may be generated or pro duc'd *de Novo*, ſeems probably ded cible *partly* from what has been a ready delivered (in the firſt part theſe notes) concerning the Prod ction of *Acid Salts*; and *partly* fro what will be ere long recited of *Ac* as well as of *Urinous* and of *Vino* Spirits, obtain'd by diſtillation fro one and the ſame body. And if v take the word *Acid*, as I uſually in theſe notes, in a familiar ſenſe without Cryptically diſtinguiſhing from thoſe ſapors that are a kin it, perhaps the ſpirit of ſea-ſalt a that of Nitre may be fitly enoug propos'd as Inſtances of the prod ction of Acid ſpirits. For though *ſe ſalt* and its diſtill'd liquor have u on ſome bodies the like operation

is either of them will precipitate silver out of *Aqua fortis*, yet not only the taste of the spirit of *salt* (especially that which rises last in distillation) is exceeding different from that of crude salt, not only in strength and penetrancy; but in this, that, the spirit is highly acid: Whereas the crude salt has a taste not properly acid, but that which by a distinct name is in *Latin* commonly call'd *Salsus*, such is that which predominates in Brine; and it does not appear, that this acid spirit did as such preexist in the salt whence it was obtain'd, so that we may suppose it to have been made rather by transmutation, than extrication. And the like I think may (and that with greater probability) be said of the spirit of *Nitre*; for though this be highly acid, yet the *Nitre* that afforded it is not at all sensibly acid; and this new vehement taste of the spirituous parts, as well as their great efficacy in dissolving Metals, and divers other bodies, seems to have been produc'd by the Violent action of the fire, (agreeably to what I formerly noted) *see Part the 1.*

which by cleaving the Nitrous cor
puſcles, or by rubbing them one againſ
another, or by both theſe wayes, an
perhaps by ſome others, makes
comminution of them into fragment
or particles, which both becauſe o
their ſmalneſs and lightneſs may b
elevated by the action of the fir
and becauſe of the ſame Minutenes
and their ſharp and pointed figure
may gett into the Pores of man
other body's and divide their part
I know that Chymiſts may objec
that all the Acid ſpirit that can b
deſtilled from *Nitre*, was really pr
exiſtent in it, and only clogg'd an
diſguis'd by the *Alcalizate* Ingredien
Wherewith it was aſſociated, as ma
appear by what I my ſelf relate
the ſpeedy way of making *Salt-Pete*
by putting a due proportion of th
ſpirit of *Nitre* to the *Alcali*, or fix
part of *Nitre*, that remains, aft
the *ſalt-peter* has been fulminate
or burned. But to this I anſwer
that this proves indeed, (what
readily grant) that *Salt-peter ma*
be Artificially compounded of
Nitrous Spirit and a fixt *Alcali*, bu
doe

loes not prove that Nature does al-
vayes, or so much as ordinarily pro-
luce Nitre by the same wayes, that
s, by compounding it of the same
ngredients: for it does not appear,
hat wherever *salt-peter* is generated
n the Earth, Nature has before hand
aid in a provision of Lixiviate Salt,
hich (at least in these Countreys)
s not wont to be made without
he violence of an incinerating fire
nd of Corrosive Spirits, to obtain
hich or either of them, Artists are
ain to employ Vehement fires; where-
s it seems that *salt peter* is slowly
enerated in the Earth by gradual
r successive Alterations of some I-
oneous Matter, wherein for ought
have observed, not an *Acid* but an
rinous salt is predominant, as may
e made probable by what I have
ormerly related about Earth, that
ad long *lain* covered with pigeons
ung in a dove-house, which I found
n Destillation to yeeld a *Volatile* spi-
t and salt, much like those of *V-*
ine. Therefore I will not affirm,
hat Nature does never employ *fixt*
lcali's and *Acid Spirits* to make

ſalt-peter, yet I ſee not that Chymiſts have hitherto given us, or perhaps offer'd us any cogent proof that ſhe muſt neceſſarly do ſo. further obſerve this more conſiderable Argument, that, according to what I formerly noted, *ſalt-peter* deſtill'd in cloſe Veſſels affordeth us but an inconſiderable quantity of fixt ſalt, and that too, was but a very imperfect *Alcali*; though the quantity of *Nitrous Spirit* was great enough to perſwade us that not any thing near ſo much as was wanting of the entire weight of the *ſalt-peter* had paſs'd into the Receiver. And elſwhere I relate, that a freind of mine with the helpe of a peculiar Clay obtain'd near a pound of Spirit of *Nitre* from a pound of *ſalt-peter*; whereas on the other ſide by a differing way of Managing it, and without Additament, I obtain'd, as I there relate, about ten ounces of *fixt Nitre* from a pound of ſalt-peter: whence it ſeems probable, that the ſame ſubſtance that in crude *Nitre* is almoſt inſipid, may by an operation of the fire be de-

ſtill'd

till'd into a highly *Acid Spirit*, as vell as by another operation and vay of management, be brought in- o the nature of a fixt and Cauſtick *Alcali.* It may alſo be worth con- dering, whither the Spirits of *Nitre* nemſelves, when after being made *ui juris* they compoſe a diſtinct li- uor and are ſpecificated, may not e depriv'd of their *Acid Nature*, nd may become or at leaſt ma- erially concurr to make up a fixt *Alcali:* For if ſea-ſalt, which Chy- iſts do not pretend to contain any ich *Alcali*, be thorowly diſſolved n a ſufficient quantity of *Spirit* of *Nitre*, and impregnated, this com- ounded ſalt will, as I have for- ierly noted, yeeld a conſiderable roportion of fixt *Alcali* like that f *ſalt-peter*, which is as likely o proceed from the Nitrous, as rom the Marine part of the reſul- ing ſalt; and if it do, it will make t the more probable, that it is ot neceſſary, that the ſaline cor- uſcles of Spirit of *Nitre* ſhould e primordial bodies, ſince they nay be deſtroy'd or turn'd into o-

ther ſalts, which is not leſs repugnant to the nature of a *Principle* than 'tis to be *De Novo* producible from a body that was no *Acid* before.

Th

The IV. SECTION.

T may add much probability, to
nat has been above discourſed,
ncerning the producibleneſs of the
ffering ſorts of *Spirits*; if it ſhall
peare, that the ſame body, meerly
different wayes of ordering it,
ay be eaſily enough brought to af-
rd, either *Acid*, or *inflammable*, or
olatile commonly called *Urinous* ſpi-
ts, as the skilfull Artiſt pleaſes.

An Inſtance of this may be afforded
s, by ſome *Legumen's*, as Peaſe, or
eanes; which if they be newly ga-
nered and diſtilled in a Retort, 'twill
preſume be eaſily granted, that
ney will like many other green ve-
etables afford, beſides a great deal
f Phlegme, an Acid Spirit, and if
much miſremember not, I had ſuch
ſpirit from either peaſe, or beanes,
r both, after they had been kept
ong enough to looſe their verdure:
But if theſe ſeeds be at a fit time
luely fermented with common water,

I thinke it will not be doubted, but that they, as well as other mealy seeds, will yeild an ardent spirit, but it will not so easily be suspected, much less beleeved, that without adding any thing to them, or meddling with them, barely by keeping them in a dry place, for a certaine number of months, they will yeild a spirit that by one, that did not know whence it proceeded, would be judged near of kin to the spirit of *Urine*, or of *Hartſ-horne*, and to other saline liquors drawn from animall substances; for having distill'd these *Legumen's* by themselves, without an addiment, and without so much as breaking them, they afforded no spirits, not only far more like in smell to those, I have compared them to, than they were either to *Acid*, or *Vinous* Spirits, but very like them, in more intimate qualities; since they would, as the Spirit of *Urine* and *Hartſ-horne*, make a conflict with *Acid* spirits, turne Syrrope of Violets greene, dissolve Copper blew, precipitate a solution of sublimate into a white substance, and in a Word

perform

performe thoſe things, which I many yeares ago delivered in the Tract about *Colours*, and ſeverall ingenious writers have ſince embraced, as the diſtinguiſhing markes of *Volatile* and *Vrinous* ſalts, or ſpirits. I ſay *ſalts or Spirits*, becauſe I found that theſe drawn from Vegetables, as well as thoſe afforded by Animalls, may eaſily by a dexterous ſublimation be brought to exhibit many of their nobler parts in the forme of a dry ſalt, as well as in that of a ſpirituous liquor.

Another inſtance I ſhall take from the juice of grapes, though Chymiſts will perhaps thinke it ſtrange, that I ſhould undertake to accommodate it to my preſent purpoſe, but there is no great myſtery in the buſineſs, for the freſh juice of grapes or muſt, though ſweet in taſte, will if it be timely diſtill'd to the Conſiſtence almoſt of a Syrrope, yeild a copious flegme, but not an ardent Spirit: if the ſuperfluous moiſture be skilfully evaporated, there will remaine a kind of *Rob* or *Sapa* of a pleaſant tartneſs, which I have known uſed in ſome places, (as eſpecially in, or neare

neare *Suizerland*,) for an excellent ingredient of ſauces, and alſo, to be ſpread upon bread to be eaten inſtead of butter.

But if this *Raiſinee* or *Sapa* were preſently diſtilled, I ſuppoſe it would yeild no *Vinous*, but an *Acid* Spirit: I ſaid, *I ſuppoſe*, becauſe for want of Vineyards in *England*, I could not examine any liquor taken out of great Veſſells of Muſt, and therefore cannot ſay preciſely and experimentally, what diſtilled liquors it would afford; ſince I know not certainely whether the great quantity of the ſweet liquor, and its continuance for ſome time (though not a long one) in the ſtate of what they call *Muſt*, may not ſomewhat alter it's productions. but if, as it is probable, that diverſity be not conſiderable, I may ſafely ſuppoſe, that the *Vinous* ſpirit afforded by the Juice of Grapes, after fermentation has turned it into Wine, is a produced thing, and was not in that forme preexiſtent in the Juice; for having purpoſely cauſed ripe grapes to be moderately preſs'd, that their Juice may without much dreggy matter

matter be Squeezed out, we put this liquor into a glass head and body, and distilling it with a gentle fire, we obtained a scarce credible proportion of flegme: And then transferring the somewhat inspissated remainder into a Retort, after having kept some of it (which had a grateful mixture of sweetness and acidity) for *Raisinee*, we prosecuted the distillation with a stronger fire, and obtained not a *Vinous*, but an *Acid* spirit, as we found not only by it's smell and taste, but by it's corroding fragments of Corall, even in the cold, by it's growing sweet upon *Minium*, &c. Agreeably to which experiment I found by tryall, that Raisons, which consist chiefly of the Juice of Grapes, inspissated in the skins or huskes by the avolition of the superfluous moisture through their pores, being distill'd in a Retort did not afford any *Vinous*, But rather an Acetous Spirit, that, as an *Acid* liquor, would worke upon diverse bodies, as spirit of Vinegar would have done, and yet as it was formerly noted, 'tis known that *Raisons* being

ing in a due proportion fermented with common water will after a certaine time afford a *Vinous* and inebriating liquor; and though this time in the better ſort of the known wayes, of making artificiall wines is wont to amount to many months yet I have practiſed a way (which conſiſts chiefely in a determinate proportion of the water to the *Raiſons*, by the help of which the liquor in very few weekes becomes fit to drinke, and conſequently to affor by diſtillation a *Vinous* ſpirit; but this only upon the by.

I ſhall now add, which probably you will thinke ſomewhat ſtrange that from the Juice of Grapes even after it has been duely fermented there may be Obtained a diſtilled liquor, which having not found mentioned in Authors, I thought that I might take the liberty to name and upon the account of it's taſte and ſome other qualities to call it the *Acid ſpirit of Wine:* to ſatisfy you therefore, that there is ſuch a liquor I will not make uſe of *Rheniſh* wine or other wines, that are thought to

eliſh of Acidity, but I will acquaint ou, with an Experiment that I choſe o make upon Sack, as a Wine fully ipe, and more remote from an Acid nd Tartarous nature, than thoſe are ont to be, that are made in leſs hot limates. We tooke then ſome good *ack*, and having a digeſtive Furnace, nd in a glaſs-head and body ſlowly lrawne off the Ardent ſpirit firſt, and hen the Phlegm, (which even in this enerous Wine was copious) till here remained a liquor of the conſiſtence of a ſomewhat thin ſyrup, we removed it into a Retort, and diſtill'd it by degrees of fire, whereby we obtained, beſides a ſouriſh flegme that came firſt over, a true acid ſpirit, as appeared not only by the taſte, but by the hiſſing noiſe and numerous bubbles that were produced, when we poured it upon a Lixiviate ſalt; as alſo by this, that having put it upon powdered Coralls, it began briskely to diſſolve them, even in the cold; we likewiſe made it corrode ſome metalline, and minerall bodies, of which 'tis not here neceſſary to give you an account, no more than

than of the black ſubſtance that re
mained after the diſtillation; onl
two things I will here intimate abou
them. The one, that as this Acid ſp
rit of Wine has its origination diffe
ring from that of other known Aci
ſpirits, and even from ſpirit of Vine
gar, ſo I thought it not irrationall t
conjecture, that it might have ſom
peculiar qualities, whoſe diſcover
I leave you (if you think it worth th
while) to proſecute: only by way o
encouragement, as well as hint,
ſhall tell you, that having put ſom
of it, for a certaine reaſon, upo
filings of copper, in ſuch manner tha
ſome of them, after being wette
with the ſpirit, ſhould remaine ex
poſ'd to the Aire, and others ly
beneath the liquor, I found thoug
the tryalls were made in the cold
that in a day or two, the expoſe
filings had gained a fine blewiſh gree
colour, but the ſpirit that ſwam up
on the other filings, did in few hou
acquire a fine redneſs, which after
wards in two or three dayes degene
rated into a colour, like that of th
expoſed filings. The other thing
wil

rill note, relates to the *Caput Mor-uum* of the distilled Wine, which I ound a more fixt body than one ould have expected, and it is that ough probably the finer part belong-ig as to other Vegetable mixts, so to ie Juice of Grapes, being attenuated nd subtilized was changed into an rdent spirit, and therefore appea-ed not in the distillation, in the orme of Oyle, yet 'tis not unlikely iat the courser part of the oleagi-ous substance remained still in the *aput Mortuum:* for holding it in the ame of a Candle, I observed that it ould partly exhale in thick smoke, artly melt, and as it were fry, and id partly burn with an actual flame, hich was not only continued while ie flame of the Candle cherished it, ut would after it was removed from ie Candle, continue a pretty while flame upon its own account, and parcell of it, being cast upon uicke, (but not upon flaming) oales, burned with a blaze, al-noſt as if it had been Amber, or itumen. I could here tell you, of ne *Chrystalls of Wine*, that I many yeares

yeares ſince made by a peculi way, of the above mentioned e tract of Sacke, but this may be el where more fitly mentioned.

To returne therefore to our Ju of Grapes, we ſee that meerly by ſeemingly ſlight difference in t management of it, it may be ma to afford either a *Vinous*, or *Acid* ſp rit, and I ſhall now add, that it n alſo be brought to yield a *Volatile Urinous* one; for 'tis known that proceſs of time, Wine affords *T tar*, and though Chymiſts ſupp the ſpirit of *Tartar* to be of a qu differing nature from that of *Ur* and of *Soot*, and though I have el where ſhewn that *Tartar* diſtilled common way affords a double ſpi namely an *Acid*, and another tha thought fit to call *Anonymous*, ye elſewhere ſhow that by a pecul and ſlow way of operating, I h been able to obtaine (though perh not conſtantly) from crude *Tart.* without any Additament, a ſpiritu ſubſtance; that in taſte, ſmell, a divers manifeſt operations, much m reſembled the Volatile ſpirit of *Ur*

r rather that of *Soot*, obtained as nine of *Tartar* was, by meere distillation, than an *Acid Spirit*: with which (so little did they agree) it was disposed to make a conflict as soon as they were put together. But ich a kind of *Volatile* substance may e far more easily obtained from he Lees of Wine, than from *Tartar*, for having been accidentally nformed, that an expert Chymist in *ermany* had found the way to get ore of *Volatile Salt* from lees of Vine, I resolved to try whither it night not be done without any addition, and having procured some of he best lees (I could get) of *Rheiish* Wine, I caused them to be exposed in broad Vessells to the Sun, nd the free aire, (which circumtance yet I am not sure is necessary) hat they might leasurely be dryed, f not also be impregnated in order o the *Volatility* of their saline parts. Then these dryed *fæces* being carefully distilled in a Retort by degees f fire, the liquor was slowly rectiyed, by which meanes there ascend d before the Phlegm a spirituous

part, which would turne Syrup o
Violets greene, precipitate diſſolve
ſublimate into a white powder, ſoo
colour it ſelfe upon Copper with
deep blew, and in ſhort do ſeveral
things, by the performance of whic
we have elſewhere diſtinguiſhed *V*
latile Salts and Spirits, from *Aci*
and from *Vinous* ones. By all ſuc
Tryalls upon the Juice of grapes, w
may inferr the truth, we intende
to prove by them, namely that t
ſame matter as it is differingly m
naged, may be made to afford an
cid (beſid s one that is truly *Aceto*
a *Vinous* and a *Volatile* ſpirit: beſid
that, *ex abundanti* it may alſo
made to yeild, as I have noted
mentioning the diſtillation of *Tart*
another ſort of ſpirituous ſubſtanc
as yet *Anonymous*.

N

lew observations about the Adiaphorous ſpirits of Woods and divers other Bodies.

AND now having faln upon the mentioning of this ſort of ſpirits hat I have call'd *Anonymous*, ſince I emember not that the notice I gave ie Publique of them * has engaged ny writer to examine them; I am ontent on this occaſion to touch upon me of the more quicke and eaſy tryls that I have made about this kind Liquors, that I may both excite id ſomewhat aſſiſt the Curioſity of oſe enquirers, that ſhall attempt to ake a farther diſcovery of the nature theſe ſpirits, which when I firſt parated from the Acid ſpirits, where-ith Chymiſts had before confounded em, as ſtiling them and taking them be meerly the Acid ſpirits of *Tar-r*, *Wood*, &c. their properties were little known to me, that I conten-d my ſelfe to ſtile them *Anony-ous ſpirits:* but ſince having found

* *This was done in the Sceptical Chymiſt*

them to differ in divers qualities, bot
from *Vinous*, from *Acid*, and from *Ur*
nous ones, and having not ſufficientl
diſcovered their poſitive properties;
was wont to give them a negative ap
pellation, and call each of them th
Neutrall or *Adiaphorous* ſpirit of th
body that affords it (whether it b
Tartar, *Wood*, or any other like co
crete.)

But before I deſcend to particular
it will not be improper to premiſe
generall, three or foure things n
unfit to make way for the obſerva
ons that are to follow them.

1. I know not whether it will
requiſite to repeat in the firſt plac
that our *Adiaphorous* ſpirit may be o
tain'd by diſtilling the Liquor that
afforded by Woods and divers oth
bodies, *by Diſtilling this Liquor* I
from Coralls, or calcin'd Lead,
by this meanes the Acid corpuſcles
the *Menſtruum* will worke upon
Corall or the Lead, and ſo faſ
themſelves to what they corrode, t
they will eaſily enough part with
Adiaphorous ſpirits, which by th
meanes are permitted to aſcend
the-

hemſelves and fall into the Receiver,
the forme of a liquor. This, as I
as ſaying, I know not whether it
e neceſſary to inſiſt on in this place,
ecauſe I have already mentioned it
another paper: but I think it may
e very pertinent to relate here, that
endeavoured to try whether there
as not a difference in gravity or fix-
lneſs between the *Acid* and *Neutrall*
irit of Wood, without mortifying
e firſt, and whether by the help of
is gravity and fixedneſs I might not
able to ſeparate, at leaſt in great
rt, the *Acid* from the other, and ſo
reſerve it in its diſtinct nature.

In order to this, I cauſed a pretty
ntity of the rectifyed ſpirit of *Box*
be ſlowly diſtill'd in a glaſs Body
d Head plac'd in a ſand cappel with
e flame of a Lamp, as that which
ould give a more gentle and regular
at than Charcoal, as indeed in the
ſt 24 houres or thereabouts this
rnace afforded but about two ſpoon-
lls of liquor, and though the *Men-*
uum firſt put in ſcarce exceeded by
r gueſs one pint or pound (if it
ere ſo much) yet it was divers dayes

and nights in drawing over. And in th
operation the next obſervable circur
ſtances were theſe two. 1. that t
liquor that firſt aſcended was n
Phlegme, but had a very penetra
taſte, yet without any manifeſt Ac
dity, diſcoverable by the tongue
though by purring it upon fine pov
der of Corall (whether crude or ca
cin'd I remember not) yet had for
operation that made mee think it n
altogether devoid of Acid particl
Secondly having often ſhifted the R
ceiver, the better to judge wheth
the portions of the aſcending ſpi
were conſiderably different in quan
ty, I found that towards the latt
end the liquor that came over w
ſharper than before, and having
length diſtill'd all I could make to
riſe, we found the laſt parcell of
quor (which was copious enough)
be of a good yellow colour, (thou
thoſe that preceded it were limp
enough) and both to ſmell ſtrong
Vinegar, and to taſte more acid up
the tongue than ſpirit of common
negar it ſelfe: ſo that if I had
known how it was obtain'd, I h
ſuſpect

ıſpected it to be what the Chymiſts ıll *Acetum radicatum*, and according- I found it to be a very active *Men-ruum* in the diſſolution of ſome bo-y's that for tryalls ſake were put in- it. All which ſeems to argue, that ıe Acid portion of ſuch diſtill'd li-uors as I have been ſpeaking of, is ore ponderous, or more fi.t than ıe *Adiaphorous* ſpirit which upon this :count may be in great part ſepa-ıted from it, by bare diſtillation, if it e warily enough made.

My ſecond generall remarke ſhall e, that I have obſerv'd theſe *Neutrall pirits* to be not all of them in all ıings of the ſame nature, ſince though ıey agree in ſome generall attributes, hich ſuffice to entitle them to the ıme ſpecies or denomination, yet they ometimes differ from one another in articular qualities: which advertiſe-ıent I thought it neceſſary to premiſe, hat it may not ſeem ſtrange, and that may not be blamed, though ſome of ıe tryalls I ſhall ſet downe do not unctually ſucceed in their hands, hat ſhall not make uſe of the *Anony-ous* ſpirit of *Box*, which I employ'd;

not becauſe I think it better than an
other, but becauſe amongſt dive
that I have made uſe of, I had then
greater quantity of it at hand. Bu
though for this reaſon, when I ſha
ſpeak what I have obſerv'd in an *Ac*
aphorous ſpirit, without naming it,
would be underſtood of the ſpirit
Box, which I had freed from its Ac
mixture by diſtilling it from calcin
Corall, yet I ſhall not ſo confine m
ſelfe to this, as not to mention nc
and then, ſome other ſpirit of t
ſame family.

The third generall obſervation th
I ſhall make about our *Adiaphor*
ſpirits, is, that though the few Ch
miſts that have taken any notice
the diſtilled liquors, for example,
Woods, were wont by reaſon of th
Acid taſtes to looke upon them,
of a meerly Acetous nature, and h
ving accordingly call'd them the V
negars or Acetous ſpirits of Woo
yet really the Acid portion of the
diſtill'd liquors, is far from being t
greateſt: for beſides what other try
I have purpoſely made, I remembr
I took eight ounces of the rectify
ſpir

ſpirit of Box, wherein the Acetous and neutrall ſpirit remain'd confounded, as they had been in the firſt diſtillation, and having poured this upon a quantity of Calcin'd Corall, ſufficient to ſatiate the Acid Corpuſcles, (which quickly fell to corrode it with noiſe and bubbles) we gently diſtill'd it to a dryneſs in a glaſs head and body, by which meanes we obtained of *Adiaphorous* ſpirit, but eight grains leſs than ſeven ounces and an halfe, and ſome of the *Menſtruum* having been waſted in the operation, the Acid corpuſcles remaining in the bottom with the Corall they had corroded, weighed but between two and three drachmes; which ſhews, that notwithſtanding the not contemptible quantity of ſtrong ſpirit of Vinegar, that by our lately recited obſervation the diſtilled liquor of *Box* do's containe, the Corpuſcles that make it ſo Acid being concentred, take up but a little roome. And ſince it was rationall to ſuſpect that the Acetous Corpuſcles being made without fermentation, might have ſomething peculiar in their nature, I caus'd them

to

to be gradually diſtill'd with a ſtronge fire from the Corall, and thereby obtained a very red ſpirit, of which, though many Chymiſts would take it for a *Volatile* tincture of Coral, I ſhall only obſerve, that its ſmell was very ſtronge, and its taſte exceeding penetrant, but very differing from that of *Acid liquors*.

Whether our *Adiaphorous* ſpirit may (as I ſometimes ſuſpected it may) be generated, by a commixture of the finer parts of the oyl of the wood reduc'd to an extraordinary ſmalneſs, and thereby capable of being exquiſitely mixt with the Phlegme, and ſtrictly aſſociated with it's particles, I ſhall ſtay till I be better furniſhed with experiments, before I venter to determine.

Having premis'd the foregoing generall obſervations, I ſhall proceed to particular *ones*, as ſoon as I ſhall have advertis'd you, that for the better diſcerning the *Phænomena* to be produc'd, I choſe to make almoſt all the following tryalls in Cylindricall glaſſes of about an inch in *Diameter*.

To

To the *Phenomenon* I am about to take notice of, I therefore give the first place, amongst those produc'd by the help of our *Adiaphorous* spirit, because 'tis uncommon and not unpleasant: for though we have many Experiments of the suddain *transmutation* of colours, whereby we change one into another, yet we have very few of the production of colours *De Novo*, in body's that were colourless before. And I remember not, that the writers I have since met with, have added any Experiments of this kind, to those three or foure that I have mentioned in the *History of Colours*.

1. I shall begin then with observing, that having into our *Adiaphorous* Spirit of Box dropt a convenient quantity of stronge and transparent oyle of *Vitriol*, and shaken the liquor together, there presently emerg'd a rich and lovely red colour, which at first was *Diaphanous*, but afterwards grew so deep, that it was opacous, though by shaking the glass, the thin liquor that would slowly glide downe the inside of the glass, being

being held againſt the light, manifeſted, that the colour was ſtill red though much more darke and muſcadine-like than before.

2. Some common *Aqua fortis* being put to our neutrall ſpirit and ſhaken a little with it, preſently gave it a rich Amber or high yellow colour, but not a true red: but if the liquors were not mingled by Agitation, the ſpirit did but ſlowly and gradually obtaine the above mentioned colour which was ſomewhat deeper than that of Sacke; after this change the liquor continued tranſparent, and (which is a circumſtance not to be omitted) the change at firſt was wrought without any manifeſt precipitation, though afterwards, when the mixture had reſted a good while there appeared ſome little and light feculency at the bottom of the glaſs, and the inſide of it, as far as the liquor reached, was ſullyed with a cloudineſs not eaſy to be waſhed off. One circumſtance more of this tryall I muſt not omit, which is, that notwithſtanding the ſtrong and offenſive ſmell that is wont to be juſtly com-

plained

plained of in *Aqua fortis*, in our mixture it was either none or but very faint, being conceal'd (if I may ſo ſpeake) or ſuppreſſed, and partly perhaps diſguis'd by the predominant odour of the *Adiaphorous* ſpirit.

3. Some ſpirit of *Salt* being mingled with our ſpirit of *Box*, the mixture became much leſs *Diaphanous* than the liquors had been before their conjunction, and for a day or two was only whitiſh, but when we removed it into a digeſtive furnace, and kept it there for many houres, it acquired a colour high enough, partaking of browne and yellow, and appeared to have let fall ſome little ſediment to the bottom of the glaſs.

4. Having put ſome of our *Adiaphorous* liquor on ſalt of *Tartar* it had not any ſenſible operation on it that we tooke notice of, ſave that it diſſolved the ſalt, and after ſome digeſtion appeared of a yellow colour tending to browne, and faſtned to the inſide of the Phiall in many little graines of Salt, that ſeem'd to have been firſt diſſolved and then coagulated

ted againe in newly emergent fi
gures.

5. Our *Adiaphorous* liquor bein
confounded with high rectifyed ſpi
rit of *Wine*, neither of them ap
peared to change colour much (fo
ſome change there was towards yel
lowneſs) or be opacated by their con
junction, even after ſome dayes di
geſting; but the *Vinous Spirit* di
not hinder the other from bein
turned red by the action of ſom
potent *Acid*, when it was poure
on the mixture.

6. Rectifyed ſpirit of *Urine* bein
put to our *Adiaphorous* liquor did no
make any conflict with it, but joine
with it quietly, as the above men
tioned ſpirits had done, and did no
manifeſtly change the colour of ei
ther of the liquors, whiles they were
kept many hours in the cold, bu
being transfer'd into a digeſtive fur
nace and kept there a night or two
the liquor acquired a high colour
which was almoſt Orange-browne
and there appeared ſome little *fæc*
at the bottom. Having made theſe
tryalls upon our ſpirit with ſimple
liquors

quors, I thought fit to make some ith such compounded liquors, as ıe solution of Metalls are, to see our spirit, though neither maifestly of an *Acid*, or an *Urinous*, r a *Lixiviate* nature, would procure recipitations of any part of the disılv'd Metalls.

7. In prosecuting this enquiry I ropt into some of our spirit, a little ılution of refin'd Gold, which at rst imparted there to it's own coıur (perhaps somewhat hightned) ut the mixture quickly lost it's tranıarency and grew muddy, and afer a while let fall a considerable uantity of sediment or Precipitate, he supernatant liquor having acquir'd brownish colour.

8. Having mixt our spirit with a ood solution of crude *Lead*, made vith an appropriated *Menstruum* that lissolves it readily and cleare, almost ıs *Aqua fortis* does common *Silver*, he mixture presently grew muddy, nd at length after some dayes let fall a copious sediment, over which wam a liquor between brown and red.

9. We

9. We put to our ſpirit of *Bo.* ſome fine ceruleous tincture or ſoluti on of Copper, made with an Urinou ſpirit, (as of putrifyed Urine or Sa Armoniack) and ſoon perceived th mixture to grow troubled, which af forded us, though but very ſlowly, copious reſidence.

10. We mingled with our ſpirit convenient quantity of ſtrong infuſio of *Sublimate* made in faire water, bu found not any manifeſt reaction be tweene thoſe liquors, no more tha we did between dry and undiſſolve *Sublimate* and the ſame ſpirit, whe we kept them together in this ſam Phial.

11. Mixing our ſpirit with oyle o *Tartar per deliquium* there did not ſuc denly appeare any manifeſt change but having digeſted the mixture fo ſeverall dayes, there precipitated light feculency, and the ſupernatan liquor, which was tranſparent, ap peared of a colour inclinable to rec

12. We alſo mingled with ſome c our ſpirit a convenient quantity o *Vitriol of Copper* diſſolved in faire wa ter, till the liquor ſeem'd ſatiated wit th

he Vitriol, but I remember not that
n ſome dayes, the ſolution grew ma-
ifeſtly opacous or diſcoloured.

13. We put to our ſpirit a ſolution
f *Tin*, made in a *Menſtruum* that diſ-
olves it cleare, and found very little
teration to enſue, though we left the
quors many houres together.

14. But when I put to our ſpirit a
onvenient quantity of the ſolution of
Mercury, made in *Aqua fortis*, the co-
our of the mixture became firſt deep-
yellow, and in a minute or two in-
enſely red, and being digeſted for
ome dayes, I found at the bottom of
he Phial a white Precipitate, much
iore copious than I expected, and
he tranſparent liquor, that ſwam a-
ove it, was of a rich golden colour;
whether Phyſitians or Surgeons ſhould
hinke fit to employ this Precipitate,
r this tinged liquor for Medicinall
urpoſes, I ſhall leave them to conſi-
er.

15. Severall of the foregoing Expe-
iments were tryed with the ſpirits of
ther Woods than *Box*, and in parti-
ular with thoſe of *Oake* and *Guaja-
um*, the *Prænomena* of which Expe-

riments were not alwaies the sam
with those above recited, which may
probably argue some difference i
the nature of such spirits, as wel
as there is in the constitution o
the Woods that afforded them; no
for certaine reasons have I thought fi
to recount here all the tryalls I hav
made with the *Adiaphorous* spirit c
Box it selfe, of which sort I shall fo
example sake name only two, which
remember as having been the lateſt
made, whereof the *first* was, That h
ving put some of our neutrall spir
upon some pieces of fine red *Corall*
and kept them there many dayes, th
liquor did not appeare to have extr
cted any tincture from them, thoug
the upper part of the higheſt fra
ments seem'd to be turn'd white. Ar
the *other* was, That having taken
parcell of spirit that came over l
rectification in a Lamp furnace lor
before the more fixt Acetous spir
came to ascend, and having purpos
ly expos'd a Phiall scarce halfe fu
of it, in a very sharpe frosty nig
in a Garden covered with Snow a
lee, it was taken up the next mo
ni

ing, not at all frozen, but leſs impid than before, and this little pacity did (ſomewhat to our wonder) emaine more or leſs for ſome weekes fter.

The third Part.

About the Producibleneſs of Sulphur

THoſe ſubſtances, that Chymiſ
are wont to call the *Sulphu*
of the mixt bodies, that by th
help of the fire are brought to a
ford them, are not of ſo uniforme
Nature as might be expected in th
portions of the ſame Principle. F
as on the one ſide Chymiſts mak
inflammability to be the conſtitue
Character of *Sulphur*, ſoon the oth
ſide, 'tis obvious enough to tho
that are any thing vers'd in *Spagiric*
operations, that there are at le
three ſubſtances manifeſtly differi
in Conſiſtence, Texture, or bot
that, according to the notion late
aſſign

ſſign'd, ought to be referr'd to *Sulphur*. For *ſometimes* the Inflammable ıbſtance, that is obtain'd from a ıixt body by the Intervention of the ire, appears in the forme of an yle, that will not mingle with wa. :r; *ſometimes* in the forme of an ar- ent ſpirit, that will readily unite ith that liquor; and *ſometimes* alſo ı the forme of a Conſiſtent body, moſt like common *Sulphur*.

Notwithſtanding theſe various ›rmes, in which it appeares 'tis not ıpoſſible but that in *many* mixt bo- .es, not to ſay in *all*, what is cal- d *Sulphur* may be no Primordiall ıgredient, but rather a Generated r Reſulting thing. For that which common to theſe differing bodies, ıat paſs under the name of *Sulphurs*, ıd which is the conſtituent qua- :y (if I may ſo call it) that diſ- iminates them from the other ma- riall Principles of mixt bodies, muſt : confeſs'd, if we will ſpeake in- lligibly, to be *Inflammability*, or you pleaſe, a *diſpoſition to be tur- d into Fire*, and uſually alſo into ame. Which being premis'd, I con-

ſider here, that *Sulphur* it ſelfe i
made of the ſame Univerſall matter
whereof other Bodies conſiſt, and i
but a Coalition of certaine particle
thereof, whoſe Aggregate, by havin
ſuch a Contexture, Motion, &c. ac
quires thoſe properties, for which
Body is called *Sulphur*. And there
fore if the like contexture happen t
be found in other Portions of matte
or (to expreſs my ſelfe more fully
if Art, or chance can frame ar
bring together Particles of matter
ard give them ſuch a Contexture
is apt and ſufficient to diſpoſe the
to be kindled and flame or burn
way; Theſe Qualifications of ſuc
an Aggregate of Corpuſcles will ſu
fice to conferr on it the natu
of a *Sulphur*, whether this po
tion of Matter do, or do n
conſiſt, or copiouſly participate
of the Chymiſts Primevall *Sul-*
phur. For it is not by vertue
the long preceeding Duration of
thing, but by that of the Eſſent
Qualities belonging to it, that a Bo
deſerves this, or that Denominatio
As the *Snow* that fell yeſterday, a
w

as generated in a trice, is as true *now*, as that which has laine, perhaps for many years, on those *Alpes* hat are alwayes cover'd with *Snow*, r on the higheſt Mountaines of the igid zone. And in the Judgment f the Chymiſts themſelves, a Pound f *Quick-Silver* recently tranſmuted y a graine or two of their *Elixir* ito Gold, becomes as true Gold, s that which was coevall with the lountaines, where nature has form'd ie Ancienteſt Mines of that Metall.

The I. SECTION.

Of the Production of Oyles.

That 'tis not necessary, the *Oyl* or *Sulphurs* obtain'd by the Fi from mixt bodies, should be a Pr mevall Element or Principle, may l probably argued from the Experime mention'd in the *Sceptical Chym* about the Growth of Plants nouriſh by meer water, which nevertheless l Distillation afforded an oyle. A we see that in Almond trees, w nut trees, and divers others, the rai water, that insinuates it selfe in their roots, is by successive chang of Texture reduc'd into the Oy which the Fruit by expression plentifully affords. And to confir our Experiment from the growth Plants by transmuted or assimilat water, to obviate the suspition common waters being inpregna with the grosser Juices of the Ear I employ'd distill'd water. Abo whi

which Experiment I find this short memoriall among my *Adversaria.*

[A Sprigg of Mint put into Raine water distill'd, and fed almost wholly with rediſtill'd Raine water weighed July 15. gr. 3. and was taken out Auguſt the 14. and being well dryed with Paper and a Cloath, weighed 10. graines and about a Quarter: So that within leſs than a Month it grew to be three times as heavy, as when 'twas firſt put in. Another put in, and taken out at the ſame time, with the former, had attained within leſs than a Month to near four times it's firſt weight, and had ſhott out a ſecond ſprigg much higher than the firſt, and ſtore of Roots, ſome of them near as long againe, as the whole plant when it was firſt put in]

If we conſider what a great quantity of Oyle is afforded by an Olive-yard, whoſe Trees are probably, as well as thoſe that beare Apples, Cheries, and other kinds of Aqueous fruits, nouriſhed chiefely by Raine water, that being imbibed by the Roots is by various digeſtions, or preparatory changes, turn'd into

to Oyl in the Olive, it will not appeare unlikely, that *Oyle* may be produced of other ſubſtances; ſince in our inſtance it ſeems to have been made by tranſmutation of water, though this be generally reputed to be of all Liquors the moſt contrary to it, and is evidently of a nature exceeding diſtant from it.

And here I ſhall relate an Experiment, by which I attempted to produce it, out of only two diſtill'd liquors, that according to the common eſtimation of Chymiſts are uncompounded Bodies, and whether they be really ſo or not, are each of them readily diſſolvable in water, and in one another. Take then of Oyle of Vitriol, and of ſuch ſpirit of Wine as is totally inflammable, an equall weight, mix them together by degrees, leſt the heat they will produce ſhould breed ſome inconvenience, and having digeſted them a good while (which yet is not abſolutely neceſſary) with a very wary management of the fire (for elſe the Experiment will eaſily miſcarry) draw off what will come over,

over, and if you goe to worke, as I have severall times done, you shall obtaine besides a subtill and odoriferous spirit of Wine and an *Acid* sulphureous Liquor, a considerable quantity of Chymicall Oyle, which I have had sometimes deeply colour'd, sometimes clear like faire water, and this Oyl you will perchance looke on as an odd liquor, when I tell you that I have had it, sometimes exceeding fragrant, and (though the oyl of Vitriol be so highly Corrosive) without any Acidity at all, the Taste of it being very subtile and penetrant, but no way like that of any saline liquor, that we know. This hath sometimes inticed me to doubt, whether it hath been made of the spirit of Wine, or of the oyl of Vitriol. The Circumstances last mentioned seem to perswade the former; especially if I add to them, that I found by Tryall purposely made that this oyle would readily mix with good spirit of Wine that had never had to do with oyle of Vitriol, but on the other side it seem'd considerable, that the

oyl

oyl of *Vitriol* by this operation was much weakened and changed, and it appear'd not, whence the ſpirit of Wine ſhould have ſo great a fragrancy, which conſiderations were back't by this more weighty Argument, that this Oyle was ſo ponderous as to ſinke not only in common water, which is yet a far more heavy liquor than pure ſpirit of Wine, but in the *Acid* ſpirit it ſelfe, which ſeem'd to be the remains of the alter'd oyle of *Vitriol*, which, by reaſon of it's abounding in Salt, you will eaſily grant to be far heavier than Common water. But I need not much trouble my ſelfe, to determine, which 'tis of the two liquors, that affords this ſtronge oyl; for it may well be (though not equally) compoſed of both, by their mutuall Action, and the operation of the Fire, united in the forme of Oyle. And if it be objected as probably it will, that this inflammable ſubſtance is made but by extrication of the parts, that lay conceal'd in the liquors before they were brought together, it may be anſwered, that this

his ſhould not be ſuppoſed, but roved, which till it be our cauſe vill be favour'd by our Experiment, vherein there appears nothing ſo ikely as a Change of Texture; to vhich may be aſcribed the Produ-tion of our *Anomalous* Chymical Oyle, ince this plainly ſeems to reſult from wo bodies whereof neither was a rue oyle before. For each of them vould readily mingle with water, vhereas this produc'd oyle of our's, being ſhaken with water, would breake ike common oyles, into numerous ittle globul's; which would preſently after ſinke to the bottom and re-unite there into a liquor, which for Tryall ſake I have kept diverſe weekes in the water, and found it at laſt undiſſolved by it. Some odd property's of this oyl make it ſeem likely to participate of ſome of the nobler parts of *Vitriol*, and the ſulphur of that Metall having extraordinary vertues aſcribed to it, by ſome of the famouſeſt and Intelligenteſt Spagiriſts, (as *Baſilius Valentinus Helmont* &c.) I kept ſome quantity of this oyle by me for ſeverall yeares, to obſerve,

as

as I did with pleaſure, the alterations that time would produce in it, and afterwards I imparted either ſome of the Medicine it ſelfe, (whereof the firſt Tryal proved very ſucceſsfull) or the wayes of preparing it, or both, to ſome ingenious Men, who (I am told) did not all of them remember me in the free mention they made of it.

But this concernes not our Argument, upon occaſion whereof I ſhall obſerve upon the by, that though Chymiſts ſhould be able to prove that our *Oyl* was but ſeperated from the ſpirit of Wine, or the oyl of *Vitriol*, in which it was latent before, yet ſtill the Experiment would afford me a conſiderable reaſon for queſtioning a maine point in the doctrine of the vulgar Chymiſts, who confidently pretend to prove from the number of ſimilar ſubſtances (as they ſuppoſe them) obtain'd from a mixt body, that it was actually compounded of juſt ſo many diſtinct and true material Principles and ſuch a quantity of each. For if from a diſtill'd Liquor, as the

oyle

yle or rather ponderous and *Acid* pirit of *Vitriol*, or from *Alcohol of Vine*, which is commonly reputed to e uncompounded, a liquor of quite nother kind may be (not *made* but) *parated*, how little reason have we, take it for granted with the Chyists, that every distill'd liquor, that ey looke upon as one of the Comonent Principles of the Body that forded it, is a *Homogeneous* substance ot further divisible into differing arts.

The

The II. SECTION.

Of the Production of inflammable Spirit.

AFter what has been hither delivered concerning the produ ction of Oyles, I ſhould now pr ceed to that of another ſort of l quors, referr'd by the Chymiſts, the principle they call *Sulphur* though better known to others, b the Name of *inflammable Spirits.* B of theſe I ſhall purpoſely forbear discourſe in this place and rather r fer to what I have ſaid to them another, where I thought it more pr per to conſider them; Namely, one of the Sections of that part theſe Notes, that treats of the pr ducibleneſs of *Vinous Spirits.*

Th

The III. SECTION.

Of the Production of Consistent Sulphurs.

If you should here tell me, as perhaps you will do, that what I have been hitherto saying relates but to inflammable liquors, whereas *Sulphur*, in it's most proper and primary Acception, Signify's a Minerall Body; I shall answer, that, as I formerly intimated, the Chymists use the terme *Sulphur* so ambiguously, and so uncertainly, that they have made it difficult for other Men's discourses to avoid all appearance of participating of the Confusednes, they seem to have affected in theirs. But because the most intelligible, and least indefinite Notion their writings suggest of *Sulphur*, is, that 'tis a Combustible and Inflammable Principle; I have hitherto treated of it as such. And as for that *Sulphur*, that is commonly known by that name, and bought in shops, though I know there are some

Chymiſts that have affirm'd, that from Vegetables and Animalls they can ſeparate ſuch a *Sulphur*; yet ſince they are not wont to teach us the way of doing it, nor give us any proofs beſides there own word, o there having ever done it themſelves the thing has ſeem'd ſo improbable that I find few or none of the mor Judicious of their own Party, tha looke upon it, as other, than a Bragg only a follower of *Glauber*, I fin to have undertaken, by his Maſter directions, to produce a real *Sulphu* like the Minerall, out of Vegetab Charcoal, by a way, which, becau it has deceived more than him, an is ſpecious enough to impoſe upo thoſe that either are not Chymiſt or, if they be Chymiſts, are n *cautious Man*, I ſhall here ſet dow and examine, as after the Auth I made it.

We tooke then equall quantiti (ſuppoſe a pound of each) of go oyl of *Vitriol* and of common ſ ſalt, diſſolved in as much water s was requiſite: This mixture was ſlo ly diſtill'd till the bottome w through

roughly dry, (which it will not be
soon as it begins to look white,
appeare coagulated) then setting
ide the Liquor, (whereof the first
rt that came over was Phlegm,
d the other part spirit of Salt)
e tooke out the *Caput Mortuum*,
which if one pleases, may be pu-
yed by being dissolv'd and phil-
'd) and having beat it to powder
th about $\frac{1}{4}$ or $\frac{1}{8}$ part of its weight of
arcoal, we put it in a strong
ucible, and kept the mixture mel-
l in a Vehement fire, till it grew
a darke reddish colour, for by
t time such a change was made in
e Mass, that it both smelt and ta-
d rankly enough of Sulphur; and
spirit of *Sal Armoniack* were sea-
nably distill'd from it, with a com-
ent, but not over hasty fire, the
ending spirit would be manifestly
pregnated with *Sulphur* not diffi-
tly separable, which may also be
ers other wayes obtain'd from the
ne fixt *Caput Mortuum*.

But for all this specious operation,
lo not take the *Sulphur*, thus pro-
'd, to have been the Vegetable

Sulphur of Charcoal, but a Minera
Sulphur that lay conceal'd in a l
quid forme among the ſaline par
of the Oyle of Vitriol.

For, *Firſt*, 'tis not likely th
ſo ſmall a quantity of Charcoal,
was employed in this Experimen
and much leſs that ſo ſmall a qua
tity as *may ſuffice* to make it, cou
containe ſo much Sulphur as m
this way be obtained.

Next, that common *Vitriol* is n
deſtitute of Minerall Sulphur, m
be eaſily conjectur'd by the Sulph
reouſneſs of the Marchaſites where
'tis wont to be made. In ſo mu
that in divers Countreys, as abo
Liege, and in ſome parts of *Ita*
from the ſame ſubſtance that
fords them Vitriol, they obtaine
ſublimation great quantities of co
mon Sulphur, which is ſold for ſu
into divers other Countreys. An
have found by Tryall, and do not
all thinke my ſelfe in that ſingul
that one may obtaine from Vitriol
oyle, and a *Caput Mortuum*, wh
being put together afforded a ſmel
common Sulphur ſo ſtrong, tha

as ſcarce able to indure it.

And to come yet more cloſe to our xperipment I have (as I have elſewhere entioned) purpoſely tryed, more than ice or twice, that by diſtilling together mmon oyl of *Turpentine* and com-on oyle of *Vitriol*, the former of oſe liquors, would make a ſepara-on of ſome of the Sulphur that lay nceal'd in the latter, and as it were tricate and extract it: ſo that be-es an exceedingly Sulphureous li-or, which ſometimes was made nite by the copiouſly diſſolved (and rtly precipitated) Sulphur, that ſſ'd into the Receiver; we had in e Necke of the Retort a yellowiſh nſiſtent body, which being put up-a quicke Coal, would, after a tle yellow flame (probably pro-eding from ſome adhering parts *Turpentine*) afford good ſtore of ewiſh flame, like that of common *lphur*, which it alſo emulated in s ſmell. And ſuch a kind of *Sul-ur* I have alſo ſeen, in tract of time, ttle it ſelfe, in no inconſiderable antity, at the bottom of the Liquor, ſtill'd from the mixture of the two

above mention'd Oyles. Nor a
these the only wayes, by which I ha
obtained from oyle of *Vitriol* manif
proofes of it's containing a *miner*
Sulphur very like to common *S*
phur.

And in particular it now comes
to my mind, that I once put into
Retort, together with one part
running *Mercury*, four parts of o
of *Vitriol*, and having distill'd off
Menstruum, by degrees of fire, th
remain'd at the bottome of the G
a very white powder. This *Ca*
being afterwards gradually prest w
a stronger fire, afforded in the
per part of the Retort a great m
small bodies, that look'd like h
Blades of Amber, and seem'd to
of very fine *Sulphur*, (but were
terwards contounded with many
ther ascending corpuscles.) T
Amber-like Body (which was so
what copious and as to some po
ons of it whitish) by its readiness
be melted, by its smell and by
blewish flame it afforded when it b
ned, appeared to be a kind of
phur, which you will easily grant,

far more unlikely to have proceed from so Homogeneous a body, the *Quicksilver*, than from the yle of *Vitriol*, which we have already shown to consist of divers Sulureous as well as many Acid corscles. And on this occasion I remember, that, whereas upon minging the oyles of *Turpentine* and of *triol* in a due proportion, I have nstantly observed, that they inrporated into a mixture, that was eply red, (and this may easily be yed by letting fall two or three ops of oyle of *Vitriol* upon some ops of that of *Turpentine*, and mixg them in a concave Vessell, or en in a hollowed piece of paper) hereas, I say, I observ'd this, I was ereby induc'd to suspect the *Chyical* (for I say not, the *Optical*) use of that *Phænomenon* might be, hat the *Terebinthinate* Oyle had ade a solution of divers sulphureous articles it met with, in the oyle of itriol, and by that meanes acquired ich a redness, as we see that comon flower of *Sulphur* gives to the yle of *Turpentine*, when 'tis dissolv'd

in it. And to examine this conje
ſture, I found that divers other Chy
micall oyles, and oyle of *Aniſeeds* i
ſelfe, as remote as 'tis from redneſs
would preſently acquire that colour
being carefully incorporated with
due quantity of oyle of *Vitriol*. Bu
this conjecture is propos'd only upo
the by.

As for the *Sulphur* of Mineral
and Metalls, I confeſs, I hav
not yet found enough, either
Chymiſts Bookes, or in my own E:
perience, to make me willing
ſpeak e Dogmatically about them. A
this the rather, becauſe *firſt*, as
the *Sulphurs* that are ſometimes o
tainable from ſome of the Mineralls
I thinke it may be doubted, wheth
they belong'd to thoſe Mineralls
Eſſential Ingredients, or were on
Corpuſcles of Common *Sulphur*, pe
haps a little alter'd, that were min
led in the bowells of the Earth
with other parts that are eſſenti
to the nature of the Minerall.
we ſee, that in native *Cinnabar* t
Mercury, which according to Ch
miſts is a compleat Metall by it ſelf

s ſo mix'd with another body, as ıot to be diſtinctly diſcernable till t be ſeparated by the fire. And this *Cannabar* affords me an inſtance, the nore fit for my preſent purpoſe, be-:auſe I have ſometimes by an eaſy vay obtain'd a Sulphur alſo from it: ınd ſince we have lately noted, that :he Vitriolate *Marchaſites* afford great ſtore of common Sulphur, by a groſs way of ſeparation, it ſhould not ſeem irrationall to ſuſpect, that ſome common *Sulphur* may remaine more cloſely mixt with the ſaline and metalline parts of the Vitriol afforded by the ſame *Marchaſites*; from which Latent corpuſcles of *Sulphur* may in part proceed, the ſulphureous ſmell, and other like things that we have lately taken notice of in Vitriol, and it's oyle. And perhaps by the ſame conſideration one may account for the ſulphureous qualities that are ſometimes to be met with in the Liquors that paſs for the Vinegars of Minerall Bodies, and particularly *Antimony*; to which may now and then be added ſome metalline Oar's: ſince I remember, I have had ſuch a ſulphureous Li-

quor

quor from good lead-oar, that I had ordered to be purpoſely digg'd out of the Mine at *Minedeep*, and being put in cloſe Veſſells ſpeedily conveyed to me. And that nature her ſelfe may blend an imperfect minerall with Lead, I have had occaſion to obſerve by an oar, whereof the owner found a Mine, but not being able to diſcover what it was, deſir'd me to enforme him. For this gave me occaſion to conſider the Oar (whereof I have yet a Lump by me) and to obſerve, that 'twas ſo differing from the other oar's of that Country, that I did but diffidently gueſs, that 'twas a mixture that Nature had made of *Lead* and *Antimony*, till particular Tryalls had juſtified my ſuſpitions.

But this is not all I had to ſay about the *Sulphurs* of Foſſiles: For though I know that Chymiſts pretend to teach us wayes of Extracting the true *Sulphurs* of Mineralls, and Metalls; and Experience aſſures me, that a reall combuſtible *Sulphur* may be in a pretty quantity obtain'd from *Antimony*; yet there are two ſcruples that ſuffer me not fully to acquieſce in what

what they teach. The *first* is this, That Chymists oftentimes deceive others and themselves too, by mistaking those things for the true *Sulphurs* of Meralls, and Metalls, that really are not so: Of which I shall give a plaine instance in the preparation that many Spagirists deliver of the *Sulphur* of *Antimony*:

For when they have boil'd that Minerall in a strong *Lixivium* of Potashes, they suppose, that, as by the same operation, common *Sulphur* is dissolved, so the *Menstruum* seeks out, and takes up, only the Sulphureous Parts of the *Antimony*: And as common *Sulphur* is precipitated out of the *Lixivium*, wherein 'tis dissolv'd, by sprinkling on it Vinegar, or some other *Acid*, so they presume, that what is strucke down the same way from the solution of *Antimony*, made in the same *Menstruum*, must be the true *Sulphur* of that Minerall; in which they are confirm'd by the colour: And yet in reality, not only the *Sulphur* (supposing that there is one) but the other parts of the *Antimony* will be dissolved by a strong

ſtrong *Lixivium*, and the yellow pow-
der, that is precipitated, is but a
kind of *Crocus*, which will ſometimes
after a while (at leaſt in part) ſubſide
of it ſelfe, without the help of an
Acid. Nor do's it convince me, that
ſuch a Body obtain'd from a Mine-
rall, or Metall, is its true Sulphur
that it may be made to burne; for un-
leſs the colour and ſmell of the flame
concurr, I ſhall be prone to ſuſpect
that the inflammability may be apt
to riſe, partly from the great com-
minution made of the prepared Bo-
dy, and partly from the additament
employed in preparing it. For theſe
two; and perhaps even one of them
may contribute ſo much to the in-
flammable diſpoſition of a body, that
little, or no true *Sulphur* will be ne-
ceſſary to make it burne. Of this I
elſewhere give an inſtance in plate
of Copper; from which an equal
weight of ſublimate has been diſtill'd.
For the remaining Maſs will melt and
burne at the flame of a Candle, al-
moſt as readily as ſealing Wax. And
of theſe Inſtances I mention more in
another paper, where I endeavour
to

o shew, that combustible and inflamnable bodies may be made up of Parts or Ingredients, that singly had not such Qualities. And yet the contrary of this is supposed in the Chymicall argument that inferrs from these Qualities, the presence of *Sulphur* in all those Minerall preparations, wherein they are found. Yet by this discourse I would not be thought to derogate, from the Medicall vertues, or other Utilities of such supposed *Sulphurs*. For they may be very usefull Concretes, though they be not true Principles; the finer parts of the Minerall being in some of these preparations extracted, and further divided, and perhaps very luckily associated with the finer parts of the Body, employ'd to act on them. By which meanes there may emerge new Concretes of great vertue and use. And therefore I intend not to derogate from those Metalline *Sulphurs*, which some Few Masters of Chymicall *Arcana* reserve with great care among the chiefest they are proud of. And that you may the better examine

Of the Producibeness of Inflammability.

examine theſe fine *Crocus's*, as I am apt to thinke moſt of them, and try both what they are, and what they do; if I can light on the Proceſſe, (for I dare not truſt my Memory) I will at the end of this *Appendix*, impart to you a way of preparing ſome of thoſe that are made of Metalls, thoſe being accounted the moſt difficult as well as noble. And thus much I now remember of the Tryalls I made according to this way; That I employ'd not any *Acid Menſtruum*, or liquor made of any particular ſalt; but a *Neutral* or compounded ſalt; which whiles it was in actual fuſion, would diſſolve or corrode the very thinly laminated Metall.

I do not looke upon theſe ſubſtances as the true *Sulphurs* of the Metalls that afford them, but rather (as I lately intimated) ſuſpect them to be a ſort of fine *Crocus's*, and perhaps Magiſtery's; which by reaſon of the ſubtility and ſometimes Fixtneſs of their parts, may prove uſefull to conſiderable purpoſes both in *Alchymy* and *Phyſick*.

But there is another ſort of Body's obtain'd

obtain'd from ſome Mineralls, and perhaps from Metalls too, that has greater reſemblance to Minerall *Sulphur*, than the newly mention'd *Crocus*'s have.

To this purpoſe I remember that by putting *Aqua fortis* in a certain proportion upon Crude *Antimony*, and after it was almoſt totally diſtilled off, increaſing the fire till a fiery ſubſtance began to ſublime, we had in the upper part of the Retort a yellow and brittle ſubſtance, which being carefully ſeparated from the dark coloured Antimoniall powder, that was alſo elevated by the force of the fire, appear'd not only by its own colour, but that of its flame, and ſome other ſignes, to be much of the nature of common *Sulphur*: nor is this the only way whereby we have obtained ſuch a ſubſtance from Crude *Antimony*, from which (if I much miſremember not) I have had a yellow and combuſtible *Sulphur* even without the help of a *Menſtruum*.

Paracelſus pretends to have a way of drawing *Sulphurs* from all Metals; of which proceſs becauſe I have found little

little or no notice taken by Chy
mists, I shall for the oddnes's of it
and the reputation of the Autho
(whom I looke upon as a Man
great Experience in Metalline a
faires) subjoyn it, as I find it amor
some of his loose papers or fra
ments.

Sulphur Metallorum
Theophrasti.

Sulphur Metallorum est oleitas ex i
sis extracta, prædita virtutibus p
hominis salute. Sulphur aliud ex M
tallis antequam ignem sunt passa eli
tur, ut ex Marchasitis aureis, aut
genteis, &c. secundum nobilitatem n
"*neræ, etiam nobile & præstans:*
" paucis interjectis, (Extractio Si
" phuris ex mineris Metallicis) *Eti*
fieri potest per lixivium acre & dep
tatissimum: sed (vel potius illa) *a*
Sulphura pro intrinseco corporis usu n
nus sunt commoda propter alkali ci
rum, ex quo clavellatum conficimus e
dens, & propter calcem ex quibus ta
fiunt lixivia. Sulphur sic extractum p
t

eſt ablui aqua dulci, & præcipitari. Digeſtio duplum requirit temporis. Deet & rectificari lixivium per ipſius ublimationem ab omni reſidentia terreri, ne cum ipſo incorporentur talia ulphura, & fiant corroſiva ad pernieiem ægrotorum: quod ne fiat d cta debet eri ſeparatio. Tantum de crudis.)

Sed jam fuſis & depuratis elicias oſorum Sulphur: certa nobilior meiorque via non dabitur, quàm per aquam ſalis ſeu oleum ipſius præparatum, o modo quem in Alchymia luculenter leſcripſi. Talis quippe aqua fundaler & radicitus extrahit omnibus cororibus Metallicis liquorem ipſorum Naturalem, ſeu Sulphur & crocum præſtantiſſimum tam pro operibus Medicis, quàm pro Chymicis. Reſolvit & frangit unumquodlibet Metallum, ex Natura ipſius Metallica deducens in aliam, pro varia intentione & induſtria laborantis.

Thus far *Paracelſus*'s proceſs; but as I know not whether it be true, becauſe I am not able to reduce it to praſtiſe; ſo becauſe I do not clearly underſtand his meaning, and what is

the true nature of the Inſtruments he would have us employ, I will not take upon me to determine, whether or no, the *Sulphurs* he teaches us to be obtainable by this method, be genuine ones, and fit to decide the queſtion we are now conſidering.

But whatever become of this obſcure *Paracelſian* proceſs, what was ſaying about a ſort of body's leſs remote than the formerly deſcrib'd *Crocus*'s from the true *Sulphurs* of Metalls (if they have any ſuch) may well ſubſiſt. For I remember we have ſometimes (though the Experiment did not always ſucceed) by cementing very thin plates of a certain Metall with burned allum, and afterwards dexterouſly elevating the more diſpos'd parts with Sal-Armoniack, obtain'd a ſublimate, from whence we ſeparated, by ablution with faire water that diſſolved the Salt, a ſubſtance which by its inflammability appeared a kind of metalline Sulphur.

And this may ſuffice touching the *firſt* ſcruple I thought fit to propoſe concerning the factitious Sulphurs of

metal

netalls and Minerals. (To proceed herefore now to my *second* ſcruple,) may I think be ſuſpected, that e-en this ſort of Body's which I have entioned to have been drawn from Metall and from *Antimony*, may ot be the effects of a *bare ſeparation* preexiſtent *Sulphur*, from the o-er Ingredients of the Bodies that ilded them, but new Concretes pro-ic'd by the *operation* of the Fire n thoſe Bodies, and by the *combi-tion* of ſome of their parts with oſe of the *additament*, employed obtaine the *Sulphurs*. For, as far I have yet ſeen, either Salt-peter ude or diſtill'd, or Menſtruums made it, or of other Salts, or elſe O-ginous liquors, are wont to be ide uſe of on theſe occaſions. And s very poſible, that ſome of the ore diſpos'd parts of theſe adidta-nts may aſſociate themſelves with oſe of the Minerall or Metall to be ought upon; and ſo from this Com-nation of the Ingredients, there y reſult a Body of a new Texture, ich Texture may diſpoſe it to be mbuſtible, or inflammable, whe-

ther the Ingredients in their ſeparate condition were ſo or not. As I remember I have elſewhere ſhown, that though *Aqua Fortis* be not inflammable, nor a piece of Crude Copper inflammable or combuſtible in a common moderate fire, yet the Metal being diſſolv'd in *Aqua fortis*, and the ſuperfluous moiſture warily exhal'd, there will remaine a fuſible Concrete, wherein the Copper being much comminuted, and its ſmall parts fitly aſſociated with the ſaline ones of the *Menſtruum*, compoſe a kind of Vitriol that being held in the flame of a Candle, or even of a piece of Paper, will readily burne away in a flame finely colour'd; and which may, if one pleaſe, be kept in a flame diſtinct from the other.

To conclude what I have to ſay about my ſecond ſcruple; it ſeems not improbable, that if any of the Metalls be by a fit *Menſtruum* and ſome other congruous additament reduc'd to parts minute enough, and that theſe parts be fitly aſſociated with ſome of thoſe of the *Menſtruum*; the Metall may thereby be brought

rought to burne or flame, as I have ucceſſefully tryed by a way elſewhere eclared, upon *Gold* it ſelfe, whoſe ulphur the Chymiſts would have us ook upon, as (what ſeems not very agreeable to the Nature of Sulhur) incombuſtible, ſo that, for ught yet appeares, 'tis allowable to uſpect, that the Sulphur *obtaind* om this or that Metall, is not *ſo uch* an Elementary or Hypoſtaticall rinciple barely extracted, as 'tis a agiſtery, or ſome other new compound, made by the Combination of he Metalline particles with all or ome of the Body that workes on hem. But if a Chymiſt *will have* letalline preparations of this kind o be Sulphurs; I may be allowed to ake them ſerve for Inſtances of the roduciblenes of Sulphurs.

Yet theſe doubts concerning the ulphurs of Metals I propoſe, but s *ſuſpitions*, to draw on further, nd more accurate Tryalls; by which erchance they may be happily reov'd. And ſpeaking of the *Sulphueous Principle* of mixt body's, in hat general notion of it, wherein

the Chymiſts often uſe it, and in deed muſt employ it; we may b thought to have ſaid enough to ou preſent purpoſe, though we had lef *Mineral Sulphurs* untouch'd; ſince we have ſhewn, that inflammable par of mixt bodies may be *produc'd*, an therefore cannot be ſafely affirm'd t have *all* been *preexiſtent* in them.

Th

The forth Part.

Of the Production of Mercury,

THE complaint I have divers times had occaſion to make, of the rkneſs and ambiguity that Chymiſts ve allowed themſelves, if not af-ted, in treating of their *Three Prin-les*, is applicable to nothing more tly than to what they have written, out that which they call *Mercury*. r when they would ſeem to tell what they mean by that Principle, y are wont to do it, in terms looſe and ſo ambiguous, that the reſentations they make of it, are re like to Panegyricks, and ſome-ies to Riddles, than to *clear defini-ns*, or ſo much as *good deſcriptions*. ce then they have given us no ed notion of what they call *Mer-y*, but have left us to gueſs what y mean by it; I hope a miſtake ut it (if I ſhould run into any)

would appeare pardonable. That which is agreed on by the moſt o Chymiſts, when they ſpeake ſomewha intelligibly of the Principle they cal *Mercury*, is, that 'tis a crude ſubſtance and that 'tis a volatile liquor, whic by being ſo, may be diſtinguiſh'd fro the *ſaline* principles, eſpecially fro the *Alcalizate* or *fixt* ſalt, as it ma alſo be from the oyle or *ſulphu* by it's not being inflammable. B theſe marks will not diſcriminate i from *Phlegme*, which is alſo a fug tive and uninflammable liquor; a therefore to make the difference, th muſt add ſome other quality, ſu as *ſapor*, (which yet agrees not *Quickſilver* it ſelf,) that is wanti to *Phlegme*. So that according this doctrine, the nature of a Ch micall *Mercury* or *Spirit* will co ſiſt, in its being a liquor volati not inflammable like oyle or ſulph nor yet inſipid like phlegm: How o a principle this muſt be, that co priſes ſuch differing body's, as *Acid ſpirits*, as thoſe of Nitre a Vitriol; *Urinous*, as thoſe of blo Hartſhorne; &c. and *Anonymous* on

; thoſe of Guaiacum, Honey, Rai-ons, and &c. forc'd from their acidity; nd the running Mercury's of Mine-als and Metals, as Cinnaber, Anti-ony, and Lead; under one Princi-le, which to deſerve that name ought o have all the portions of matter elonging to it *Homogeneous*; I may afely leave any conſidering Natura-iſt to Judge. And therefore inſtead of taking further notice of this, it nay ſuffice for my preſent purpoſe o mind you, that as for the *Mer-cury's* or uninflammable *ſpirits* of Ve-gitables and Animals, I have endea-voured to ſhow their production where I diſcourſe of that *of Spirits and vo-latile ſalts.* And therefore I need but ſay ſomething of the Productio-on of *Mercury* more properly ſo cal-led, that is, *running Mercury*: about which perhaps it will not be leſs ac-ceptable to you, and I am ſure it will be leſs troubleſome to me, if I leave you to gather my opinion out of three papers, that were written for differing *Vertuoſi*, at ſeverall times, and on diſtinct occaſions; upon which account, beſides thoſe particulars

particulars that relate to our preſent Argument, you will perchance find ſome things, that you have not elſwhere mett with.

Whe-

Whether Mercury may be obtained from Metals and Minerals,
Or
To speake Chymically) An dentur Mercurii Corporum?

THat there may be extracted or obtained from Metals and Minerals a fluid substance, in the forme of running *Mercury*, is the common opinion of Chymists; in who's books we may meet with many processes, to make these *Mercury's*: which because they are said to be offorded by Minerall, and especially Metalline bodies, these Writers affect to call (how aptly I now examine not) *Mercurios Corporum.*

But notwithstanding all this, divers of the more learned of the Spagirists themselves, have look'd upon the pretension of other Chymists to the art of making these *Mercury's* as but a Chymical brag: and some judicious modern Writers, applauded therein by most of the mechanicall Philosophers,

phers, have proceeded ſo far, as to explode all theſe *Mercury's* of body's as meer *non entia Chymica*, nay ſome of them have not ſcrupl'd to cenſure all thoſe who pretend to have ſeen or made any of them, as credulous or Impoſtors.

In the management of this controverſie, I confeſſe I am not ſatisfy'd with either of the contending parties; and therefore though I ſhall not refuſe to comply with your curioſity to receive in a few lines my thoughts whither there are or may be any ſuch *Mercury's* as are diſputed of; yet I deſire leave to premiſe ſuch a ſtate of the controverſie, as I think will avoid ſome verball janglings, and at leaſt acquaint you clearely with the ſenſe wherein I deſire tohave my opinion underſtood.

Waving then, in the preſent enquiry, the Queſtion that may occur, *Whither or no the Mercury's ſaid ito be obtain'd from Metals and Minerals are primitive ingredients*, or *Hypoſtaticall Principles only extracted or ſeparated from*

om the body's that afford'd them? I all propose the question in these rms: *Whither or no from a Metall or linerall body, there may, without the ldition of any body, that we may be re has any common Quick-silver in it, obtained, by the help of Art, a sub- ance resembling common Quicksilver, y being ponderous, fluid when actual- cold, Amalgamable with Gold and some ther metals, and indisposed to wet or ick to ones hand, or to body's not of Metalline nature.*

To give you now my present houghts, about this question, I shall offer them to your consideration, in he following propositions.

There are divers processes of making the mercury's of body's, that are so darkly deliver'd, that the generality of Chymists cannot suficiently understand them, to be able to try them; for some of these processes are set down in termes of Art, which, for their great darkness or ambiguity, are not to be understood but by the authors themselves, or those who are vers'd in the more

The first proposition.

more mysterious parts of *Hermetick* Philosophy. And others there are of these processes, that require some *menstruum* salts, or other instruments that 'tis not in the power of ordinary Chymists to procure. Instances of this kind may be frequently enough met with, by those that have the curiosity to peruse heedfully the Writings of those that passe for the *Adept Philosophers*. And for a *specimen* of such processes, I am content to annex to the close of this paper, the way delivered by *Lullius* of making *Mercury* of Silver, *Helmont's* way of preparing *Mercury* of Lead, and *Paracelsus's* way of extracting the *Mercury's* of all Metals.

The second proposition.

There are divers processes to make Mercury's of body's, that are either false, or accompanied with circumstances that make them unfitt to be trust'd. For there are of these process's that having been curiously try'd, by those that had a great desire to find them true, have not been found to succeed at all in practice. Hence we have so many complaints of Chymists, that have

ive loſt their labour in endeavouring
make according to *Beguinus's* dire-
ions(in his *Tyrocinium Chymicum*) the
ercury of Silver, though I do not take
at to be one of the difficulteſt to be
repared; and he that converſes much
nong thoſe that have made attempts
make the *Mercury's* of other bo-
's, as Gold, Antimony, &c. accor-
ng to the vulgar proceſſes extant
Chymicall books, will (if I mi-
ke not) find by their confeſſions, how
tle the events of their endeavours
ſwer their labours and expectati-
s. Nor doe all the Manuſcript pro-
ſſes that are communicated to pri-
te freinds, as great *Arcana*, much
cell thoſe I have been ſpeaking of;
ſeverall of my acquaintance have
mplained to me, that they have found
their coſte. And here not to men-
on my own experience (which by
e help of good Principles made me
mely deſiſt from unlikely attempts)
mongſt the many Chymiſts I have
nown, I remember not to have found
ove three or four credible perſons,
at would affirme to me, that they
ade or ſaw made the *Mercury* of a-
ny

ny metall or minerall (except of na tive *Cinnaber*, which is the natur oar of Quickſilver) in a conſtant wa by any proceſſe he had found i printed books, ſo that, ſo many o theſe proceſſes having been upon tria found falſe; wary men may be excus'd if they do not think fit to beleeve o ther proceſſes of *mercurification*: whic though not yet try'd ſeem'd not mo probable, than thoſe that have bee already found ſo unſucceſsful, that n only many learned modern Natural ſts, but *Angelus Sala*, and divers othe eminent Chymiſts themſelves, ha publiſh'd to the world, that theſe *Me cury's* are to be found no where, b in the bragging Chymiſts books a promiſes; and ſome have, as has be already intimated, gone ſo far as brand all thoſe, for cheats, that pr tend they can make ſuch *Mercury* and thoſe for credulous that belie they can be made. But what I thi of this ſevere opinion I ſhall quic ly have occaſion to declare.

The third Propoſition. *There are ſome proceſſes, wherein is thought that the Mercury of a met*

r. *Minerall is obtained; when indeed he obtain'd Jubſtance is miſnam'd, or he true Mercury that is ſaid to be exracted, was put in, though in a diſuiſed forme, by the operator.*

I will not here give inſtances of he ſubtile cheats, that may be put pon the ignorant and unwary, and ometimes too upon the skilfull, if ney be not alſo cautious; but ſhall ontent my ſelfe to illuſtrate the proofition, by a few known and therefore innocent inſtances; and firſt there re ſome, who finding themſelves unble to make the true *Mercury's* of meals or minerals, make bold to aſcribe he name of *Mercury's*, to productins who's qualities are very remote om thoſe, that are agreed to be eſentiall to Quickſilver. Thus *Globeus* ſpeaks much of his *Mercury of Lua*, which yet is far from being runing *Mercury*, or having the ponderoty and other properties of true Quickilver. So *Angelus Sala* himſelfe in his natomy of *Antimony* would have us o look upon the Reguline parts of hat *mineral*, as its *mercury*: becauſe

he takes it for granted, it muſt con-
tain *mercury*, and is pleaſed to fancy
no other can be obtained from it
But the difference of the Reguline par
of Antimony, and running mercury i
point of conſiſtence, gravity, and o
ther quality's, will, I preſume, in
diſpoſe men to confound them. An
therefore, I will proceed, to con
firme the ſecond part of our propoſ
tion; by ſhewing that the *Mercu*
obtained by ſome proceſſes that ma
ſucceed, made part of the Addita
ment imploy'd by the Artiſt in th
operations, and ſo was not prope
ly extracted from the metal, bu
only recovered from the body, con
pounded of the metal and the Add
tament. Of this, I remember, I hav
elſwhere given an eaſy inſtance, in
deluding experiment, that I lon
ſince ſhewed ſome *Vertuoſi*, in whc
preſence having mingled the filings
Copper with a certaine ſalt, ar
put them in a conveniently ſhap
veſſel of Glaſs, I warily held it
ver a competent fire of well kin
led charcoals, till the ſalt was th
rowly melted, and in part ſublim

by which operation the Copper seem'd to be quite chang'd, especially in colour, and was really become inflammable, and there remained in the lower part of the Glass, a pretty deal of running *Mercury*, so that they would have gone away perswaded, that they did see me make the *Mercury* of *Venus*, if I had not been carefull to undeceive them, which I did by telling them, that this Quicksilver was only the common *Mercury*, that lay disguised in the compounded Sublimate I had imployed together with the Copper, which set the *Mercury* at liberty from the corrosive salts it lay concealed in before, by presenting them a Metall more disposed to be wrought on by them than Quicksilver is.

The fourth proposition.

It is posible to obtain, att least from some metals and Minerals, true running Mercury, that cannot be justly thought to come meerly from the additament. This proposition a Chymist might more compendiously express by turning it into this short Assertion, *Dantur Mercurii corporum*; but I thought the words

I have imployed would expreſs my ſenſe more warily and clearly; and yet *ex abundanti*, I ſhall add this further explication, that though the propoſition ſpeaks affirmatively, but of *ſome* Metals and Minerals; yet it does not deny, either that *more* Minerals or that *all* Metals may afford true running *Mercury*: by which I underſtand (according to what I formerly noted) a Minerall body fluid, opacous, exceeding ponderous, Amalgamable with Gold, and not apt to wet or ſtick to one's fingers, or any other body's beſides ſome Metalline and Mineral ones.

That ſuch a Mercury may be obtained without the help of Additaments, whereof Quick-ſilver is an ingredient, I have been perſwaded to believe by the following obſervations.

I remember that many years ago having had an occaſion to diſtill Copper with certaine ſaline ſubſtances, I was not a little ſurpriſed to find in the veſſels (that had been luted toge-
gether

gether) some globules of running *Mercury*, which I could not reasonably suspect to come from the Additament, which was not Sublimate, nor any thinge I could Judge to containe Quicksilver. And though the indispositon I had to admitt the *Mercury's* of body's, that so many learned men looked upon as non entities, made me somewhat diffident of the genuineness of the *Mercury* I had obtained, (whereof I had not quantity enough to make Just tryals) yet afterwards, when I found that accidents of the like nature had happen'd to severall of my freinds, I began to think, that what I had kept only for a few dayes as a questionable rarity, might really have been *Venerial Mercury*.

A laborious Chymist of my acquaintance comming to visit me once when I was not well, was very earnest with me to communicate to him the way of making the *Mercury* of *Antimony* and of *Saturn*, and when I told him that I had no such processes of my own, and that I was far

from believing thoſe that I had mett with in printed books, to be true ones. he would not acquieſce in this anſwer. but declaring that he reſolved to make attempts to gain ſuch *Mercury's*, and had rather do it, by Methods of my propoſing, than of his own deviſing he preſſed me ſo much to let him know which way I would go to work in caſe I had the ſame deſign, that he then had, that to be rid of his importunity, I told him what on ſudden came into my thoughts: and as ſometimes the mind, being put to ſuch plunges, happens upon a lucky hit, and ſuch as much premeditatio would not have led it to: ſo it happen'd at that time to me; for when I, becauſe of my diſtemper, had forgott this affair, the Chymiſt, who was a plain honeſt man, came to me with great joy to give me thanks for the inſtructions I had given him, bringing along with him ſome *Mercury* of *Antimony*, and a little *Mercury* of *Lead* that he had already made by the help of thoſe inſtructions; by purſuing which, he expected to obtaine much more *Mercury* from the Minerals whe

ey ſhould be longer digeſted with the ncourſe of the air, in thoſe Salts that I d adviſed him to grind with them. This eaſing ſucceſs of directions, which had as to divers particulars forgot- n, made me deſire them of the ymiſt, who, beginning to be proud his attainment, when he perceid I remembered not ſo much as he ought I did, ungratefully delay'd bring me the account he promil me at firſt, till the plague reachg to the place where he lived, and patching him, deprived me of the pes of ſatisfying my curioſity.

Two gentlemen of my acquaintance, t unacquainted with each other, rking almoſt at the ſame time upon ver, did each of them to his wonr, find parts of his Silver turned o running *Mercury*, with which odd cident each of them came to acaint me, bringing along with them little portion of the unxpected rcury; one of theſe portions a ſervnt of mine loſt by miſtake before could try any thinge with it; the ner I found by a tryall unknown

to the maker of it, not to be com
mon, but metalline *Mercury*; of whic
the Chymist complained to me, tha
he had, sometimes had considerabl
quantity's to his great loss, becau
much of the Silver he employed in a
operation, that he expected woul
prove *Lucriferous*, being turned in
Quicksilver had Swallowed up all h
gaine, and this was that which inv
ted him to apply himselfe to me
hoping to be able to prevent or r
medy this inconvenience by my advi
which I willingly gave him, but b
cause of his departure out of *En
land*, could not know with what su
cess.

A fellow-traveller of mine, havi
occasion to employ a saline body abo
Lead, after he had finish'd his ope
tion, left the Lead and salt toget
for some months, in a vessel wh
he lay'd by in a Garret, where
air had access to it, afterwards w
ting such a vessel, and not be
able to supply himselfe readily in
country (in which his experiment
made) he remembred this long negle

ed vessel, and comming to see whither it was fitt for his turn, he found to his wonder, that tho he had employ'd no Mercuriall body to work upon the *Lead*, yet part of it was already turned into Quicksilver, separable by straining, and more seem'd in a near disposition to admitt the like Change: Whereupon he brought me, as a rarity, a part of the Metall and a little of the Mercury, which I found by experience on Gold, to be of a Nobler kind than common *Mercury*. And I the less wondred att this Mercurification, because examining the Gentleman that chanced to make it, I found the maine thinge he had imployed in the operation was common, or Sea-salt.

An expert Metallist of my acquaintance, being desirous to try, what Gold and Silver he could gett out of a fine *English Marchasite* I had presented him at his desire, he examined it according to his method, without any Mercurial preparation, and found to his surprise, that it yeelded him, besides other things, some running *Mercury*,

cury, which he brought and gave me, becauſe it was afforded by the *Marchaſite* I had preſented him.

The *Mercury* of *Antimony* more than one of my freinds have made, by unſuſpected additaments, ſuch as ſalts, that have nothing to do with Sublimate, or other compoſitions whereof common *Mercury* is an Ingredient. One of theſe Antimonial Mercury's look'd ſo oddly, that though it were made by diſtillation, I had that curioſity to try, whither it would not operate on Gold, in a peculiar manner, and having accordingly put a little fine *calx* of that metall (as about half a drachme or a drachme) into the palm of my hand, I added to it an equal or double weight of the above mention'd *Mercury*, That immediatly incorporated with a very manifeſt heat. And this was the quick way I uſed to examine other *Mercury's* of body's, for though this alone be not a certaine ſigne of a *Mercury's* being of that ſort, becauſe I can obtain a *Mercury* ſo qualify'd by another way than any I have hither-

to

) mentioned; yet as their assertions nd relations gave me sufficient ound to conclude, that they had btained those *Mercury's* from the bo-'s that they affirme to have yeeld-l them; so the readiness of these *lercury's* to mix with Gold, with-it the help of fire, and even to ow hot with it, which vulgar Mer-ıry will not do, confirmed, that they ere Metalline *Mercury's*, rather than f the same kind with common Quick-lver. And my way of obtaining incale-ent *Mercury* is so quite differing from ny of those, that there was not the ast cause to suspect, that the *Mer-ry's* of body's we have been men-oning were so obtain'd, especially, nce I knew that my way was un-nown to most of the persons I have ientioned, and was practis'd by none f them.

As for the *Mercury* of *Gold*, though think I have brought a great many arts of crude *Gold* to assume a Mer-urial forme, and to come over in hat forme by distillation (whatever ivers learned men think of the insu-perable

perable fixity of Gold) yet I con-
feſſe I have not ſeen any *Mercury*
that I was ſatisfy'd did deſerve the
Name of the *Mercury* of that metall
But happening to be once in a place
Where a forreiner, that was a ſtran
ger to me, was ſhowing a freind o
his, with whom I had ſome litti
acquaintance, a Metalline experiment
that I confeſſe, I could not but ad
mire (for this Forreiner was ſo civil
becauſe I came ſo luckyly in, as t
let me be preſent att the experiment
though not to diſcover any thing c
the drug he imployed about it:) I mad
bold to ask this civill Traveller wh
ſeem'd a candid Man and I perceive
had ſeen uncommon things; Whithe
he had mett with any way of mak
ing *Mercury* of *Gold:* to which h
anſwered, that he knew no ſuch wa
himſelfe, but that he mett (ſome
while before) with a very learned Mar
in compariſon of whom, he confe
ſed himſelfe but a Novice, that pu
ſome *Gold* into a little vial, full c
a certaine *menſtruum*, which my re
lator owned he knew not how to pr
pare, and intimated to him, that th
mer

enſtruum would have a peculiar o-
ration as well upon *Gold* as *Silver*.
terward this Relatour having put
e Vial well ſtopt into his pocket,
d carried it about with him, was,
ien he came home and took it out
ſet it aſide, much ſurpriſed to find,
ſtead of the *Gold* he had ſeen put
, a pretty quantity of running *Mer-*
ry. Which the Artiſt, who only lent
m the *Menſtruum*, did not ſeem to
ink ſtrange, when he was made ac-
ainted with it.

If I would relate what I have heard
om Men, that I judge to be either
aſily deceivable themſelves, or con-
erned in point of intereſt to deceive
thers, or at leaſt of a vain glorious
ragging humour; I might eaſily ſwell
his diſcourſe to a greater bulk: But
have been carefull, to mention
nly thoſe relations to which my ſelfe,
n ſpite of my longe backwardnes to
eleeve ſuch things, ſaw cauſe to give
aſſent. And if it be objected, theſe
inſtances were but caſual experiments,
notwithſtanding which there may be
no ſetled way for the obtaining the
Mer-

Mercury's of body's: I might Anſwe
that ſome paſſages of what has bee
lately delivered make it probable e
ough, That even ſetled wayes of mal
ing the *Mercury's* of body's, or a
leaſt of ſome of them, are not u
known to ſome Artiſts: though fo
certaine reaſons, and particularly fo
the ingratitude of many Men, the
do not think fitt to divulge them. B
to anſwer more home to the obj
ction: I ſhall need only to ſay tha
though moſt of the above recited ex
periments may be ſaid to have bee
made by chance, in this reſpect, tha
thoſe that made them, did not prin
cipally deſigne the obtaining of me
talline or Minerall *Mercury's*; ye
the effects produced, were as natu
rally and neceſſarily conſequent, t
operations ſo managed as they were
as if the Artiſt had directly deſign'
them, as in ſome of the above menti
oned relations they did. And it i
not materiall for us to enquire whi
ther the Quickſilver made by thoſ
experiments be to be aſcribed t
chance or skill, ſince whatever be
comes of that queſtion, it is plain
tha

hat if metals and Minerals could by ither way be brought actually to afford running *Mercury*; there needs no nore to prove, that such *Mercury's* re really obtainable from them.

Doubts

Doubts about the preexiſtence of Running Mercury in Metalls.

THe propos'd Queſtion, *whether or no the Mercury's of Metals and Mineralls be Principles preexiſtent in them, and only extracted from them* may to many ſeem, though it do not to you, a ſuperfluous enquiry, ſince the generality of Chymiſts of differing ages and Countries, have reſolutely determined it in the affirmative which is not at all to be wondred at, ſince according to their *Hypotheſis* of the *Tria-prima*, (or three Hypoſtaticall principles) whereof they preſume all perfectly mix'd bodies to be compoſed, Metalls, being of that ſort, muſt conſiſt of *Mercury*, as well as of *Salt* and *Sulphur*; and conſequently muſt afford it upon the *Analyſis* of the body into its three Primordiall ingredients. But notwithſtanding all this, the *Problem* ſeems to me difficult enough to be reſolv'd, partly becauſe ſuppoſing that there be

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true metalline *Mercury's* preparable by Chymists, they very studiously conceal the wayes of preparation; and *partly* because as 'tis very difficult to obtain any of the factitious *Mercury's*, wherewith to make such luciferous tryalls as a Naturalist would designe; so those few Authors that affirm themselves to have possess'd such *Mercury*'s, have given us but an exceeding lame and defective account of them, not mentioning those particulars which are most proper and desirable, in order to the passing a right judgement about them. I pretend not therefore, to answer your question otherwise than conjecturally, till I shall be better furnish'd with matters of fact. But in the mean while that I may comply with your Curiosity, as much as I safely can; I shall confess to you, that for the present I am, by as much information as yet I have had, inclined to think, that the *Mercury*'s obtained from Metalls do not clearly appear to have been preexistent in them, and only separated from them by the Artist, but that I think that at least some of them

may be rather fluid Magiſteries of Metalls than their extracted Principles. One of the moſt obvious things, that ſuggeſted this ſuſpition to me, was, that whilſt ſome Metalls, as *Tin* and *Lead*, are in fuſion, they would, to one that ſhould not know of their being melted, appear to be many parcels of *Mercury:* ſince like it they are fluid and ponderous, and ſtick not to the Crucibles, or to Stones Bricks, or almoſt any other bodies except ſome metalline ones, divers o which they will eaſily pierce into, a *Quickſilver* does into *Silver* or *Gold* ſo that if the fluidity of theſe me talls were permanent, they migh paſs for *Mercury's.* And if in the Moo and ſome of the other Stars, as ther are Mountains, ſo there are metal line Mines in caſe the heat of th Climate or of the Soyle ſhould kee them conſtantly in ſuch a degree o heat, as we here find ſufficient t melt Lead (which we know need not be very intenſe) theſe metall would there emulate the nature Mercury's, as I have learned from Tra vellers, that in divers parts of th

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Torrid Zone, what would here be Butter, is fluid as well as unctious like oyl, and is sold like other liquors, by measure not by weight: and an inquisitive Man, who is a Scholar as well as a Traveller, assured me, that whilst he was in some parts of the *Indies* he furnish'd himself with some liquid substances afforded by wounded Plants, that as soon as he came near *Europe*, and not before, turned into consistent and pulverable bodies; it did not therefore seem to me impossible, that the peircing salts, and other subtle body's employ'd by Artists, about the Mercurification (as some stile it) of mettalls, may either by the agility of their own nature, or by so altering the shapes, and loosing the wonted cohesion of the mettalline corpuscles, bring them to have such a Texture and such pores, as may enable the Ethereall substance, whereto so many other bodies owe their fluidity, to agitate them. These causes I say, or some other that may be propos'd, may possibly keep the prepared mettall fluid; as we see, That though *Cam-*

phire be a conſiſtent and tough body, yet ſome Nitrous ſpirits of *Aqua-fortis* will eaſily penetrate it, and may be brought to ſtay ſo long with it, that I have for curioſity ſake kept the oyle of *Camphire* ſeverall years without loſs of its fluidity, which I found that this kind of liquor would retain, though for tryalls ſake I expos'd it to intenſe degrees of Cold, ſuch as would freeze divers other liquors. Nor did it to me ſeem impoſſible, that a ſmall quantity of appropriated Addiament might ſuffice to put a mettall into a ſtate of fluidity; for ſince we ſee that the vapour of *Lead* can arreſt *Quickſilver*, and make it a conſiſtent body; and ſince *Helmont* aſſures us, that the liquor *Alkaheſt* being once abſtracted from *running Mercury* deprives it, and that almoſt irrecoverably, of its fluidity, ſo as to make it pulverable: it appears not, why Nature or Art may not be able to ſupply ſome corpuſcles, that may expell or diſable thoſe that keep a metall in the

Eſt ſcilicet (Corallatus Paracelſi) *Mercurius à quo liquor* Alkaheſt *ſemel diſtillatus eſt, reſidetque in fundo coagulatus & pulverabilis, nequequam in pondere auctus aut diminutus.* Helmontius *in Scripto* de Arcanis Paracelſi.

the forme of a fluid body; and especially since, as I have elsewhere shewn, the matter of mettalls themselves may (at least sometimes) have been a liquor, or some other fluid body.

Another Reason that induc'd me to suspect, that the *Mercury's* of metalls and Mineralls are not, as 'tis presum'd, meerly extracted Principles or Ingredients, was, that I have observed a greater dissimilitude between *Mercury's* all of them quick, and furnish'd with all that is requisite to make them pass for true *Mercurys*, than will comport with the supposition, that they are simple and Primordiall body's, barely extricated from the others with which they were at first commixt. But this Argument being the subject of an intire, though short, discourse, (of the Dissimilitude of *running Mercury*) I need not inlarge on it in this Place.

It did also strengthen my suspition to consider, that the Chymists that

talke of the *Mercury's* they have drawn from mettalls, are not wont to tell us what other Ingredients they obtain'd by their ſuppos'd *Analyſis*'s, which left me dubious, whether they obtain'd any ſalt and ſulphur, or not; and of what nature thoſe ſubſtances were that they did obtain For if theſe were not true ſalt and ſulphur, the genuineneſſe of the *Analyſis* might be queſtion'd; becauſe it may be alledg'd, that the Chymical Operation and the Additament turning ſome parts of the mettal into Decompounded Bodies, which muſt be acknowledg'd not to have been (in ſuch) formes preexiſtent in them may alſo have by change of Textur turn'd ſome other parts of the mettal into the forme of *Mercury*.

To the foregoing Conſideration afforded me chiefly by the nature of the thing, I ſhall for the ſake of thoſe that are mov'd by the authority of *Adept Philoſophers*, as they call them add that, which among them ought to paſs for a Proofe, from Experience

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For *Raymund Lully*, whom I take to be one of the greateſt Chymicall Philoſophers whoſe Writings are come to our hands, though in many of his other Bookes he ſpeakes of *Mercury* in a darke and Allegoricall ſenſe; yet in that excellent little Tract which he calls his *Clavicula*, he delivers a Proceſs, (which is not to be wrought with vulgar *Menſtruums*, though they beare the ſame names with thoſe he preſcribes and names) from the cloſe whereof it ſeemes manifeſt, that his Deſigning was not to extract a preexiſtent *Quickſilver* out of the mettall propos'd, but to turne the mettall into *Quicksilver*; ſince he orders and directs us to proſecute the *Mercurification*, till the obtained *Quicksilver* be equall in weight to the Silver that was to be tranſmuted. And partly upon this I have ventured to ground the foregoing *Paradox*; That the *Mercuries* of Bodies are rather *Magiſteries* than *Extracts*. For in this *Lullian* Proceſs, it appears not, that the Mercuriall Principle was extracted from the Salt and Sulphur, but rather that the Body of the

Vide *Lullium in Clavicula. cap.* 2.

metall (without being Analyzed) was turn'd into Mercury: and though *Magiſtery* be a terme variouſly enough employ'd by Chymiſts, and particularly uſed by *Paracelſus* to ſignify very different things ; yet the beſt notion I know of it, and that which I find authoriz'd even by *Paracelſus* in ſome Paſſages, where he expreſſes himſelfe more diſtinctly, is that it is a Preparation, whereby there is not an *Analyſis* made of the Body aſſign'd, nor an extraction of this or that Principle, but the whole, or very near the whole Body by the help of ſome additament greater or leſs, is turn'd into a Body of another kind. As when Iron or Copper by an acid *Menſtruum*, that corrodes and aſſociates it ſelfe with it is turn'd into Vitriol of *Mars* or of *Venus*; and *Quickſilver* having a ſufficient quantity of *Aqua fortis* ſtrongly abſtracted from it, is changed into red Precipitate ; or by being ſublim'd up with common Sulphur, turn'd into *Cinnabar* ; or, to give yet a more appoſite example, when *Quickſilver* (which is the Body we treat

eat of) is by the lasting operation f the fire, without external Additaents, at least distinct from the Igeous Particles, turn'd into a red owder, that Chymists call *Precipite per se.*

I have received credible informaion and some proof too, that there is place in *Transylvania*, where porions of *Running Mercury*, which hen they fall out of the Earth and ye a while in the Air, do of themelves coagulate into permanently ard bodies: so little a distance hath Nature her selfe there put between the Mercuriall fluidity, and the solid conistence of the same portion of matter. So that if so small a thing (and perhaps unponderable as well as invisible) s the Contact of the Air can expell, s able by its presence to retain a minerall body in the form of a true *unning Mercury*, as well as by its recess to leave a solid body, I see not why it should be impossible for Art to interclose some very minute and restless particles, which by their various

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and inceſſant motions, may keepe a Mettalline body in the ſtate of fluidity; much after ſome ſuch way, as lately noted, that the ſpirits of *Nitre* did for whole years together keepe *Camphire* in the forme of a liquid oyle.

Having now propos'd ſome of the conſiderations, that inclin'd me to think, that the *Mercuries* obtained from Mettalls and Mineralls, may not have been preexiſtent in them; the impartiality that I think becomes a Naturaliſt, obliges me, to take notice alſo of thoſe things, that occurr'd to me in favour of the received opinion of the Chymiſts, in behalfe of which, I objected to my ſelfe divers ſpecious Arguments.

Of theſe, the firſt was, the generall Conſent of Chymiſts, who take it for granted that all Mettalls are compoſed of *Mercury* as a materiall Principle, and commonly more copious than any other conſtituent part of thoſe bodies; but this being an Argument, drawn only from authority, was of ſmall weight with me, in a Controverſy, pro-

roperly determinable by reaſon and xperience.

2. A ſecond objection was afforded ie, by many proceſſes I had mett with n Chymiſts Books, to extract the *Mercuries*, as well as the *Sulphurs* and *Salts* of mettalls. But neither did his Argument appear to me of any reat moment, for moſt of theſe proeſſes I look'd upon as fictitious things: vhich if the Authors of them, had taen the paines to try themſelves, they vould have found not to ſuceed in ractice, and ſcarce any of them was o skilfully fram'd, as to ſatisfy a onſidering Naturaliſt, in caſe it had ucceeded; that the obtain'd *Mercury*, vas a pure Principle only ſeparated r extracted, from the other Ingredients of the mettalls, and not a reult of ſome mettalline parts conjoyn'd with ſome parts of the additament, as t ſeem'd manifeſt enough to me; that he ſuppoſed ſalts of mettalls that are pretended to be made, by ſuch preparations, are not the Principles of ſuch mettalls, but new concretions, and indeed not ſimple, but decompounded

ded bodies; as is evident in the salt or sugar of *Lead* made with the spirit of Vinegar; and in the salt of *Steel* made with that, or other acids.

3. A third objection, and of greater weight, seem'd derivable from this consideration, that *Quicksilver* easily *Amalgams*, with mettalls, because of its cognation with the Mercuriall part these bodies abound with.

4. And this Argument appear'd capable of being strengthen'd by a more considerable one: which is, That the gravity of the metalls is such, as cannot reasonably be deduc'd from any other cause, than an abundance of the Mercuriall Principle, their being no other bodies (known to us) besides *Quicksilver*, that are near so ponderous as mettalls.

These two objections, I thought fit, to couch together, to be able in fewer words, to answer them both; I considered then that *Amalgamation* being in effect, but a kind of dissolution of mettalls, in a *Menstruum* or fluid body; for

r ſuch *Mercury* is in reference to
em; there is no neceſſity, that the
lvent, ſhould find in the Metall,
copious ingredient juſt of its own
ture: for diſſolution depends not,
much upon the pretended cogna-
n between the Solvent and the bo-
it is to work on, as upon the con-
uity, as to ſize and figure, be-
een the pores of the latter and the
rpuſcles of the former. As may
pear by the Solution of *Ivory* and
rts-horn (which belong to the A-
nal kingdome) that may be made
th *Aqua fortis*; and by that, which
have elſwhere ſhewn may be made
Zink, and even of *Copper*, by the
irit of Vinegar, the Urinous ſpi-
of *Sal-Armoniack*, and ſpirit of *Vi-
ol* ſeparatly imployed; though the
ſt of them be a *Menſtruum* drawn
m a Vegetable, the ſecond from
Animal, the third from a Mineral
bſtance. And as for *Amalgamati-
s* themſelves, I obſerve, that the
cility *Mercury* finds in joyning with
metall, does not barely depend
on the Plenty of the Mercuriall in-
edient, contain'd in the metall, at
leaſt

leaſt if the greater ponderoſity, c
ſpecifick gravity of the metall d
pend upon the copiouſneſs of t
ſame Mercurial Principle, or ingr
dient; as the fourth objection ſu
poſeth: for we finde by experienc
that *Mercury* will far more eaſily
malgame with *Tin* than with *Coppe*
which yet is much more heavie th
it; nay than with *Silver*, which is
good deal heavier, (in Specie) th
Copper; And is by Chymiſts preſum
to be much neater of kin to *Mercu*
than is *Tin*. To which I ſhall ad
that although *Mars* be ſpecificab
heavier than *Tin*, yet it is far fro
being more eaſily Amalgamable wi
Mercury, that though *Tin* will readi
admitt this Minerall liquor, wit
out the help of heat, there is
way vulgarly known to Chymiſts
make an immediate Amalgame b
tween *Mercury* and *Mars*. So th
one of the two objections I lately joy
ed together, muſt be declin'd: ſin
by the tryals I have purpoſely mad
it appears, that *either* the diſpoſitic
of Metals to Amalgamate with Me
cury, do's not barely depend upo
t

ıe ſuppos'd plenty of *Mercury* con-
ain'd in the metall; or elſe that
ıe greatneſs of the ſpecifick gravi-
r do's not depend upon the more
lentifull participation of that Mer-
ırial ingredient. Although the
ɔurth objection be built upon a ſup-
ɔſition, that the great ponderouſ-
:ſs of Metals, in compariſon of o-
:er bodies, can proceed from no
her cauſe than the great quantity
Mercury they contain; I conſidered
ıo, that it might be juſtly deman-
:d, whence, *Mercury* it ſelfe, aswell
whence Metals, derive their greate
ɔnderoſity, and I ſee not, why it
ay not be ſaid, that both the one
ıd the other own it to the Solidity
ıd cloſe order, of the corpuſcles,
ey conſiſt of, to which qualification
is not eſſential, that the portion
matter endued with them, be in
ſtate of fluidity, rather than in one
conſiſtence: as on the contrary
e ſee that *Gold* and *Lead* are ex-
:eding ponderous bodies, as well,
hen they are in fuſion, as when
ey are cold and hard; and ſo in
ickſilver as well in its wonted and
liquid

liquid forme, as when it is coagu
lated, as Chymiſts ſuppoſe, by th
vapour of *Lead*.

But this will be ſomewhat furthe
cleared in what I ſhall ſay to the fift
and laſt objection, that my thought
ſuggeſted to me, and which Philoſo
phicall candor forbids me to conceal
though I find it eaſier to be pro
ſed than anſwer'd. It may be then a
ledged in the fifth place; That th
Mercuries of mettalls muſt needs b
but partial Principles of them, ſinc
Quickſilver being confeſſedly heavie
than either the Sulphureous or ſalin
principle, and being ſpecifically hea
vier than almoſt any mettall it ſelf
the gravity of a mettall cannot re
ſonably be ſuppoſed to proceed fro
the whole body of the mettall, bu
only from ſome one ingredient heav
er *in ſpecie* than the reſt, and, tha
the mettall it ſelfe. And this ingre
dient or principle can be no othe
than the moſt ponderous body, *Mer
cury*.

This difficultie I confeſs, does kee
m

ıe yet in ſome ſuſpenſe; till I have urther opportunity, to make ſuch try- lls, as I think proper to clear it. Yet, ı the mean time, I ſhall offer ſome ew things; which perhaps may leſſen , if not quite remove it.

I conſider then that there is no eceſſity to ſuppoſe, that Metals, of hat denomination ſoever, as *Tin*, *I- n*, *Silver*, or *Gold*, are body's per- ctly *Homogeneous*, though they ſeem ich to our eyes. This ſuppoſition elſwhere purpoſely diſcours of, but ı this place I need not ſpend time bout it; ſince the Chymiſts (who re thoſe I now reaſon with) do not nly allow, but teach it; ſince they ill have Metals as well as other ixt body's to conſiſt of three Hypo. atical principles, whereof *Mercury* one, although it muſt be much hea- ier *in Specie*, than either the *Salt* or he *Sulphur* it is blended with: be- auſe it is from the participation of hat ingredient that they derive the reat ponderouſneſs which Metals have n comparıſon of other bodies.

And to this granted ſuppoſition, I ſee not why it ſhould be abſurd, to add this other, That the more ſolid and heavie particles or corpuſcles of a Metal, may lye in it, not in the forme of fluid or Mercurial, but conſiſtent parts, and that theſe may be more diſpoſed than the reſt to be brought by Chymicall additaments and the operation of the fire into the forme of a *running Mercury*. Nor ought it to be judged incredible that the forementioned ſolid portion of the Metal, ſhould be more ponderous than Quickſilver, ſince as I have often tryed, *Gold*, though a conſiſtent body, is far heavier than Quickſilver to the bare participation whereof *Gold* cannot owe its ſpecifick gravity.

If this *Hyrotheſis* be admitted, it will be eaſie to give an account how the *Mercury* of a Metal may be heavier in *Specie* (that is, bulk for bulk) than the Metal that afforded it; for the difficultie is eaſily reſolved, by ſaying, that the ſolid parts, which by the Chymical operation, are reduced into

into the forme of *Quicksilver*; were far more ponderous in kind than the other parts of the Metal, which being also associated with them did by their comparative lightness make the entire Metal less heavy (if the bulks be equall'd) than an aggregate or convention of all the solid parts alone would have been. Which may be illustrated, by what I have heedfully observed, of the decrement of specifick gravity, sustained by *Quicksilver*, when it is united by Sublimation either with Sulphur into Cinnabar, or with Salts in Corrosive Sublimate.

But I must not dissemble, that against the forgoing discourse there occurr'd to me a couple of Arguments (that I have not mett with amongst Chymists) whereof the latter is very considerable. For I foresaw it might be alledged, first, that the *Mercuries* of Metals being in a liquid forme, could not well be supposed, to be so close and ponderous bodi's, as our *Hypothesis* requires: and next, That we our selves admitt an experiment of *Raymund Lully*, whereby

he pretends to reduce the whole body of *Silver* into *Mercury*, which is a heavier ſubſtance than *Silver*; and in this caſe we cannot have recourſe to this anſwer, That the corpuſcles, which aſſume the forme of *Mercury*, were far more ponderous, than the others, that concurred with them to compoſe the metall.

This twofold objection, I do not pretend to anſwer at once, but may perhaps enervate it by degrees.

And firſt, though it be very poſſible, that a pretty quantity of additament may be employ'd about the *Mercurification* (to ſpeak in the Chymiſts language) of a metall, yet there ſhall really and finally adhere to the metalline parts, but a very ſmall proportion of Additament, that will continue with them, and keep them in a Mercuriall flux. And it may appear the more credible, that a very ſmall quantity of additionall matter, may have very great ſtroke in altering the conſiſtence of that which is obtain'd from a metall, as its moſt ponderous portion

portion: if you conſider with me, that the bare acceſſion of Igneous particles, is able in time, to turn *running Mercury*. Nor muſt I pretermitt on this occaſion, a notable paſſage I remember to have met with in *Helmont*, who relates, that by the abſtraction of the liquor *Alkaheſt* (which is wont to come all over in diſtillation from common *Quickſilver*) he did quite deprive it of its fluidity, and turn'd it into a conſiſtent body, and even into a fix'd one; whereby you may ſee how little a quantity of matter will ſerve to change the conſiſtence of a body of a Mercuriall Nature.

Beſides that, a fluid forme do's not alwaies argue the lightneſs of the body, that it is found in, ſince it may conſiſt of particles, ſo ſolid and ſo numerous, that notwithſtanding their inteſtine motion, the body they compoſe may be very ponderous: as may appeare by red hot Iron, melted Lead, and which is an Inſtance appoſite to our purpoſe, in common *Quickſilver*, which though fluid is heavier than

any known body in the world, Gold excepted.

But I consider farther, that though the solid portion of a metall retain more of the additaments imploy'd to bring it into the forme of *Mercury*, than it can be prov'd to contain, yet this disadvantage may be compensated by the new disposition of parts, that the Mercurifi'd portion acquir's, by the operation that turn's it into a liquor, and may be suppos'd to bring the parts to a closer or otherwise a more expedient order than they were in before: as *Ice* when thaw'd takes up less roome, in the forme of water, than it did before it became a liquor. I see no impossibility, that the specifick gravity of metalline bodies may be increased or diminish'd by such small proportions of additaments, as do not at all considerably add to their absolute gravity. This the Chymists ought not to deny, if they consider what themselves grant, of the efficacy of what they call the *Philosophers Stone*, whereof they tell us, that one grain, if it be of a nobler order

der or degree, may transmute a whole pound of *Quicksilver* into perfect Gold; and consequently the specifick gravity of a metall is notably changed by an additament, which (according to the differing pounds used in severall Countreys) amounts not perhaps to the 6. or 7. thousand part of its weight. Besides, the transmuing powder being a Compounded body, whereof but part is *Gold*, may probably be suppos'd to be more light *in specie* than the metall that by addition of it is produc'd; which being pure *Gold* is the ponderousest body yet known to us. And to confirme the Argument, I shall add, that there is a way, though I pretend not to know it, of making a metall far lighter *in specie*, than it naturally is, by the addition of less than a 100. part of its weight, as experience has convinc'd me.

Wherefore to come now to the grand objection furnish'd by *Lully's* lately mention'd experiment, it will not presently follow, that if the whole body of a metall be brought into a mercuri-

all forme, this *Mercury* will ſwallow up and deſtroy our *Hypotheſis*: for though I grant that in this caſe, it cannot be ſaid, as in the former caſes (wherein a part only of the metall is Mercurified) it may be, that the obtain'd *Quicksilver* conſiſts of the more ſolid and ponderous parts of the metall; yet it may be ſtill ſaid, that, *for ought we know*, the *Mercury* produc'd, by the reduction of the whole metall into a fluid forme, may be ſpecifically lighter than common *Mercury*, and ſo cannot be neceſſarily concluded to be ſpecifically heavier than the metall that afforded it. I lately imployed the words, *for ought we know*, becauſe we are now upon the caſe, wherein Philoſophicall candor invited me to acknowledge, that I wanted further tryalls to give my ſelfe full ſatisfaction: for although I have had portions of the *Mercury's* of more than one or two metalls, yet it was but in ſmall quantities; ſo that the other tryalls, I had the curioſity to make with them, kept me from examining their ſpecifick gravity, and from finding by an Hydroſtaticall way that I have elſewhere declared

eclared, whether they were not ghter *in ſpecie* than inferiour metalls, id conſequently than common *Mer-ry*. For that *Quicksilver* may be ecifically lighter than the metall that fords it, I think the Chymiſts can-ot reaſonably refuſe to grant; ſince ey allow that *running Mercury* may e obtain'd from *Gold*, and tell us reat matters of it, becauſe of its pro-eding from ſo noble a body. Now if is *Golden Mercury* be ſaid, (becauſe f the ſuppos'd reſemblance of all *Mercury's*) to be of the ſame ſpecifick eight with common *Quicksilver*, then have a notable inſtance, of a *Mercury* at is conſiderably lighter *in ſpecie*, an the metall that afforded it. And herefore, till experience have mani-eſted the contrary, it will not be ab-urd to preſume, that the *Mercury's* of ther metalls, may likewiſe be light-r *in ſpecie*, than the reſpective ody's from which they were ob-ained: but if it be ſaid, that this *olden Mercury*, may perhaps be s ponderous as *Gold* it ſelfe, or ven more, then 'tis plaine, that t is poſſible for a Metalline body,

not-

notwithſtanding its being reduc'd int
the forme of a fluid, to be equi
ponderant to the Metal that afforde
it. And that I may not ſeem to a
gue, altogether, from the conceſſior
the Chymiſts ought to make; I wi
add, by way of Confirmation, a cou
ple of things that perhaps you wi
think ſomewhat ſtrange. Where
the former is, That it is poſſible fe
a Metalline body to reſemble ano
ther in all the manifeſt qualities
whereby Artiſts are wont to examir
them, and yet they differ much fro
it in ſpecifick gravity: as I had onc
opportunity to obſerve in a Metal th
was not only white (within and with
out) like *Silver*, and very malleabl
but did, when I purpoſely examin'
it, endure Cuppellation, and paſs'd fc
& was reputed by a very eminent Arti
that ſent it me to examine, to be goo
Silver in all proofs; and yet this Metal
found by Hydroſtaticall tryalls to b
much lighter *in ſpecie*, than common *Si
ver*. And if the famous perſon that ſer
it me, was not miſtaken (for ſo I mu
not think he would knowingly miſir
forme me,) This odd metall may yeel
m

a notable instance to my present
rpose, since he affirmed this metall
be made without the addition of
y metalline body of *Quicksilver*,
ich, if this be so, must, by a change of
xture, have made a considerable loss
its specifick gravity. But to proceed
my second instance, which will be
t more apposite; I shall add, that
ce I had a *Mercury* which amongst
ier remarkable properties, that
ong not to this Argument, had a
ry strange one; namely, that it was
nsiderably heavier *in specie* than *com-*
n Mercury (as I found & shewed to
reat *Virtuoso* by Hydrostaticall try-
,) though it was made of a body no
avier than *common Mercury*, and by
help of additaments which were
ich lighter than *common Mercury*.
d this was so far from being a more
ss and sluggish kind of *Quicksilver*
an the ordinary, that it look'd ve-
fine, and was very agile, and had
fore I examined it been more than
ce distilled. By this it may appear,
at from hence, *that a body is in a*
rcuriall forme, we cannot safely de-
rmine what degree of specifick gra-

vity

vity it has. For since by this last ex
ample it appears, that a sort of *Quick*
silver may be far more ponderou
than common *Quicksilver*; it seem
not unreasonable, that a sort of *Quic*
silver may be far lighter than *comm*
Mercury, and so perhaps lighter tha
the metalls that were reduc'd int
that forme: it being far less likel
that the former should be produc
than the latter, in regard there is b
one minerall body in the world, th
we know of, at all heavier than con
mon *Quicksilver*; whereas there ar
many of those that are capable of be
ing associated with it, that are f
lighter than it.

But as I intimated above, I am unwi
ling to speak so positively about th
matter as I might do, if I had oppo
tunity to make the tryalls I woul
with the *Mercuries* of body's: onl
thus much I shall venture to say, th
for ought yet appears, the Argume
I have been answering all this whil
is not cogent, since it is built upo
a supposition, that the *Mercuries* a
forded by metals and minerals, mu
t

: of the ſame weight with common *ercury*; which is not only a proof- 's aſſertion, but repugnant to the xperiment lately mention'd of the ſtilled *Mercury*, that was heavier an common *Mercury*, and to the eſumption deriv'd thence, that ere may be body's, in a Mercurial rme, more light *in ſpecie* than com- on *Mercury*. And whatever becomes the opinion I incline to; The Ar- ment I have been examining, of e Chymiſts, may be invalidated by hat I have ſaid, where I took no- e of the notable exceſs of ponde- ſity, that pure *Gold* has in regard common *Quickſilver*: for by that ſtance it plainly appears, that it is t to the participation of common *ercury*, that metals muſt neceſſari- owe their great ponderoſity; but at nature, (and Art too,) may ntrive the parts of a body into ſo oſe an order, as to make that body whether ſolid or fluid,) more pon- erous, *bulke for bulke*, than common *uicksilver* it ſelfe.

Having now diſpatched what I in-

tended

tended to say in the foregoing di
course, it remains that I perform
the promise I made, of adding t
waies of *Mercurification* (as Chymi
speake) above referr'd too, as deliv
red by *Paracelsus*, *Helmont* and *Lull*
about which I must give you this a
vertisement, that besides the obsc
rities, and imperfections, that a m
derate degree of attention may en
ble you to discover in these proces
understood in the literall sense, the
are, if I much mistake not, some
fected Equivocations in terms th
seem very plain, and free from sus
cion of ambiguity. As for instanc
though the word *Sal-Armoniacum* se
to be of this sort, yet amongst *H*
metick Philosophers it often signifi
not common *Sal-Armoniack*, which
far from being able to perform t
effects they ascribe to theirs, bu
very differing and much more nob
and operative thing, which becau
it may be sublim'd like common *S*
Armoniack, they are pleased to call
that name: and though sometim
they give it the title of *Sal-Armo*
acum Philosophorum, yet oftentin
th

hey omitt the discriminating Epi-
ite, especially in Philosophical pro-
esses, (that is, such as those wherein
hey deliver their higher *Arcana*,) of
hich sort are many of *Paracelsus*'s
rocesses, and more (not to say most,)
f *Lully's*. What is meant by *Sal-
rmoniacum Philosophorum*, I think it
eedless to tell you here, (but may
erchance do it on another occasion,)
nce that composition requires an In-
redient that neither of us is furnish'd
ith, and that you cannot procure.
here may be other Ambiguities in
e following processes, that will not
easily discover'd, but by such as
e vers'd in the mysterious language,
hich some would call *canting*, of the
rmetick Philosophers. But I think I
ve said enough already to shew, that
e annexed processes are fit to con-
m what is delivered upon the first
roposition of the foregoing discourse;
d therefore without offering to ex-
ain them, I shall subjoyn them in
e proper terms of the respective Au-
ors.

Ratio

Ratio extrahendi ex omnibus Metallis Mercurium Paracelſica.

Hæc extractio (Scilicet Mercurii e Metallis) fit per aquam Mercurialem quæ nec *Joanni de Rupeſciſſa*, nec aliis, quicquid etiam jactitent, cognita fuit. Ideoque diligenter eſt cognoſcenda, & indefeſſo labore tractanda. Hoc ergo pacto paretur dicta aqua Mercurialis.

R. lb. III. Mercurii ſublimati ſepties p Vitriolum, Sal Nitri, & Alumen.

Salis Armoniaci, ter à ſale ſublima & clari & albi iſt. Trita ſimul alcolizata ſublima in ſublimatorio p are nam, horis 9. Ubi refrixerit, ſu limatum cum penna detrahito, & cu reliquo ſublima, ut prius. Hanc oper tionem quater repete, donec ampli

non ſublimetur, & in fundo maſſa nigra maneat inſtar ceræ, fluens. Refrigera-am exime, & tritam rurſus in patina itrea ſæpius cum ſalis Armoniaci a-uâ, ſ. autem præparata, imbibe, & ſua nte coagulatam rurſus imbibe & ſic-a, ad 9. ſeu 10. uſque vices, donec erè non ulterius coaguletur. Tritum ibtiliter ſupra Marmor in loco humi-ſolve in oleum pulchrum, quod re-ificabis per diſtillationem in cineribus, b omnibus fæcibus & reſidentia. Iam aquam omnium facile principem iligenter aſſervabis, cujus R. unc. VIII. & npone laminas opt: ſolis aut Lunæ, ptimè mundatas, pondere unc. iſs. vitro lauſo repone ad digeſtionem in cineres alidos horis 8. Corpus tuum videbis in undo vaſis tranſmutatum in ſubtilem aporem ſeu Mercurium. Factâ ſolutio-e totius aquæ Mercurialis per Alembi-um lento igne à prima materia ſubli-nando ſepara, & in vitreo vaſculo iligenter aſſervato. Habebis hoc pacto eriſſimum Mercurium corporis. Para-elſus in Man: de lapide Philoſopho-um.

Senſi (ſaies he) cruditatem Saturni, inguedine fixorum ſalium ſolubilem,

ſolo quandoque igne carptim delebilem ſicque dividi compoſiti partes, crudum que Argentum vivum currere permitti Sulphur fugitivum ſuperans in ſaturn trahere ad volatum, fixum, inſeparabi liter junctum. Quodque expediet impr mis Saturni ſublimatio. Cujus expreſ ſione nulla eſt elevati ad reſidens, color aut ſubſtantiæ differentia. Unde eti am caloris, fuſionis & mollitiei cauſis poſt calcinationes & redactiones, reſidu is medullitus, ſine igne fuſionem, ſoli tamque mollitiem minimè refutat. Hel montius, in potes. medicaminum. nun 40.

Ex

Extractio Mercurii à Corpore Perfecto.

R *Ec. unc.* 1. *calcis Lunæ appellatæ, calcinetur modo quo dicitur in fine ostri magisterii operis, quæ quidem calx eratur super porfidum in pulverem ibtilem, quem pulverem imbiberis bis, r, quater in die, cum optimo oleo Tar. ri, facto eo modo quo dicetur in fine ostri, desiccando ad solem quousque di- a calx absorbuerit de dicto oleo* 4. *aut partes, plus quàm fuit ipsa calx, rendo semper super porfidum, ut di- um est, & in fine bene desiccetur calx, ut nè possit in pulverem redigi. Et quan- fuerit bene pulverizata, ponatur in etreto cum collo longo. Ponatis de nostro enstruali fætenti, facto de duabus par- bus vitrioli rubei, & una salis petræ, prædictum menstruum prius destille- r septies, & bene rectificetur, sepa- ndo fæces terrestres in tantum, quod rædictum menstruale sit totum essentia- . Deinde lutetur benè metretum, & matur ad ignem cinerum, cum parvo ne carbonum, quousque videris mate- iam bullire & dissolvi. Deinde sic su-*

pra cineres diſtilla, donec amiſerit Menſtruum, & materia fuerit frigida totaliter, cum frigidum fuerit, vas aperiatur, & materia, quæ frigida eſt, ponatur in alio vaſe bene mundo, cum ſua cappa bene lutata ad furnum ſupra cineres, & luto bene deſiccato, fiat ignis paulatim in principio, quouſque totam recipias aquam ipſius. Poſtea augeatur ignis, quouſque materia ben fuerit deſiccata, & ſpiritus fœtentes ſin ad cappam, & in receptorio jam exal tati. Et dum tale ſignum videbis ap parere, dimittatur vas infrigidari ignem minuendo. Et poſt refrigerati nem vaſis, extrahatur materia, & i pulverem ſubtiliſſimum redigatur ſup porfidum; ita quòd pulvis ſit impalp bilis, qui ponatur in vaſe terreo bei cocto & bene vitreato. Et poſt ponati ſuper dictum pulverem de aqua commu bulliente, movendo ſemper cum bacu mundo materiam, uſque materia fuer ſpiſſa ſicut ſinapi. Et move dictam ſa ſam cum baculo, quouſque videris a parere grana Mercurii è corpore, & qu vobis appareat quantitas magna præ cti Mercurii vivi, ſecundum quod po eris de corpore perfecto, id eſt, de Luna,

d

um habueris magnam quantitatem, in-
rim projice desuper aquam bullien-
m, & tandem movendo, quoad tota ma-
ria resolvatur in materiam similem
gento vivo vulgari, tollantur terre-
reitates cum aqua frigida, & desiccetur
r pannum: postea transeat per corium,
videbis mirabilia. Lullius in Cla-
cula. Cap. 2.

FINIS.

Of the Dissimilitude Of Running Mercury.

BEfore I undertake to give you my opinion, about your question, I must crave leave to state it somewhat more clearly, by propounding it thus: *Whether all the Bodies, that in the shops, and among Chymists pass for true running Mercury's, are Homogeneous?* Or, so much of one and the same nature, that the severall portions of such *Mercury's* are but numerically different? Now to the question thus stated, the fear of seeming to maintaine a Paradox, by dissenting from the generality of Chymists, as well as Naturalists, (who are wont to employ indiscriminately all *Running Mercury's* not manifestly adulterated) will not keep me from returning a negative answer.

And though it were not over difficult

cult for me to give you the reaſons of my opinion, drawn up into method, and referr ſeverall inſtances I ſhall produce, ſome to the depuration of *Quicksilver*, ſome to the impregnation of it, ſome to the Coction, and others to two, or all theſe waies of altering it; yet I ſhall rather preſent you with them, by way of looſe obſervations, becauſe I preſume that freedome will not be unacceptable to you, as it will allow me, to give you ſome few, but uncommon notices and hints about ſuch noble ſubjects as prepar'd *Mercury's*.

1. In the *firſt* place then it may be obſerv'd, that a *Running Mercury* may be brought to differ from *common Quicksilver* by *Depuration*: for there are in moſt *Mercuries* either Recrementitious particles, or at leaſt ſome looſe adherencies, that are ſeparable from the reſt of the Body, and which being ſeperated, the *Mercury* becomes more Homogeneous or cleane than it was before this externall Depuration (for ſo I call it to diſtinguiſh it from another

nother that is internall) that is ſually made by grinding and waſhing *Mercury* very well with ſalt and Vinegar, (for which purpoſe I alſo ſometimes uſe ſpirit of Wine) which one may not unfrequently ſee ſomewhat foul'd by what it carries off from the *Mercury*, which is alſo ſometimes attempted to be purified by the more laborious way of diſtillation, which, though in ſome caſes inſufficient, (as I ſhall ſhew anon) is in ſome others very convenient; whereto ſome Artiſts add other probable meanes, tending to the ſame purpoſe. So that I do not wonder to find, that divers Philoſophicall Spagiriſts themſelves, before they proceed to more intimate preparations of *Mercury*, order it to be ſeverall times previouſly incorporated and ſublim'd with Acid *Salts* or *Sulphurs*, and then reviv'd with *Alcalies*: ſince without examining *their* grounds it may be ſaid, according to Mechanicall Principles, that by diligent commixtures the *Mercury* is divided into exceedingly minute, if not inviſible, Globules, or ſuch like parts, and by this great comminution, it

it acquires far more of ſurface than it had before, by which meanes a great multitude of ſeparable parts come to be touch'd almoſt of every ſide by the Salts or Sulphurs, to which by this meanes, when the *Quicksilver* is driven from them in the revivification, 'tis probable, that very many of them ſticke that were not ſuperficial, when all theſe Globules made up but one Mercuriall Maſs. And tis poſſible too, that the *Alcali's* employ'd to revive the *Quicksilver*, may help to tear of from it ſome of the feculent particles which the Chymiſts would deſire to have it freed from. And here let me advertiſe you upon the by, that there is no neceſſity to have recourſe to ſalt of *Tartar* or *Quicklime*, or ſuch like *Alcali's* for the reviving of *Quicksilver*, and therefore when I would with eaſe obtaine a cleane and active *Mercury* for ſome purpoſes, I do not employ Acid and then Alcalizate ſalts, but mix very well common *Cinnabar* finely powdered with a double weight, or at leaſt, an equall weight of filings of Iron, or Steel: for theſe being diſtill'd together

her in a low Retort with a ſmart ire, the ſulphur of the *Cinnabar* will aſten upon the filings, and let the *Mercury* come over faire and vivid, nd perhaps ſomewhat impregnated vith a martial vertue, upon whoſe core it may be better than if it had een prepared by meer Depuration.

2. And this leads me, to the mention f *another* way of diverſifying *Mercu-y*, which is by *Impregnation*, either Corporeall, or Spirituall (if for diſtinction ſake I may ſo call them.) But the mpregnation being a comprehenſive way, divers particular methods may, after a manner, be referr'd to it: yet becauſe the true grounds of ſuch references are ſometimes hard enough to be aſſign'd, at leaſt in few words, I ſhall allow my ſelfe without ſcrupulouſly regarding them to proceed in my free obſervations.

3. The *next* thing then upon whoſe account a *Running Mercury* may come to differ from *Common Quickſilver*, is a ſpiritual Impregnation. By *Mercury Spiritually Impregnated*, I meane that with

with which some subtle parts of another body are so intimately associated and united, that not only the additament will pass with the *Mercury*, when it is strain'd though Leather, (though that be the means by which Artists usually separate *Gold* it selfe from the *Mercury* wherewith it has been Amalgam'd) but will also continue with it after distillation, without hindering the *Mercury* from being vivid enough. I know there are many Chymists, especially, among the more cautious, that looke upon *Quicksilver* as so Heteroclite a Minerall, that as no Body can fasten enough upon it, to alter it intrinsecally, so it will not admit any other Body to be associated with it any thing intimately, or permanently. And indeed since we find that when *Gold* it selfe, with which of all bodies whatsoever *Mercury* is beleeved to have the greatest sympathy, may yet be separated from it by straining an *Amalgame* of those two metals through Leather, which will transmit the *Quicksilver*, and retaine the *Gold*; and if such an *Amalgame* be distill'd with a competent fire,

fire, the *Mercury* will aſcend, and leave all the *Gold* behind in the Retort; ſince *Mercury* I ſay, is ſo ſeparable from *Gold* it ſelfe, it may ſeem improbable, that it ſhould be more intimately aſſociated with any other bodies: but theſe arguments, though ſpecious, do not I confeſs convince me, who muſt not deny, but that the Corpuſcles of ſome minerall Bodies may be ſo well commixt with *Quicksilver*, as to paſs with it through the Pores of Leather, and who have found by tryall purpoſely made (and elſewhere related) that *Quicksilver* being in a convenient proportion Amalgam'd with *Tinn*, or with *Lead*, and diſtill'd with a competent fire, will manifeſtly bring over with it ſome of the aſſociated metall, inſomuch that not only I have found a notable increaſe in the weight of the diſtill'd *Quickſilver*, but it would both leave a taile, as they call it, behind it, when it moved upon a ſloping glaſs, and (which was more) when the ſluggiſh *Mercury* had reſted a while, it would appeare covered over, with a kind of ſcum, made of the

Emerging

Emerging Corpuſcles of the *Tin*, or *Lead*, either of which, eſpecially the former, is a metall lighter *in ſpecie* than *Quickſilver*. Hence it appeares, that *Mercury* may be ſo ſtrictly united to a not deſpicable proportion of a groſs and ponderous body, and of an ignobler kind as to carry it along with it ſelfe in diſtillation. which by this appeares not to be near ſo certain a way, as ſome learned Chymiſts think it, to try whether *Mercury* be pure in all adulterating mixtures, and to free it from them, if it had any before. But the chiefe uſe I will make of this Experiment is this, that ſince we ſee that ſometimes *Mercury* do's not refuſe even corporal Impregnations, (as for diſtinction ſake I call thoſe lately recited) it ought not to appeare incredible, that it may in ſome caſes admit ſpirituall Impregnations, and ſo intimately aſſociate with it ſelfe ſome of the finer parts of certaine metalls and mineralls, as not to part with them, though they be diſtill'd, and afterwards perhaps ſeverall times waſh'd. This brings into my mind, that I had once a di-

ſtill'd

ſtill'd *Mercury* made by an Impregnation of common *Mercury*, a drope or Globule of which, being evaporated from a thin piece of Silver, not only ſeem'd to have ſomewhat penetrated it, but (as I expected) left upon it a rugged ſubſtance apparently lighter than the ſurface of the piece, and of a colour very neare that of *Gold*, from whoſe nature perhaps it was very remote: but that common *Mercury* may indeed be ſpiritually impregnated, I have been perſwaded by divers effects, that I have tryed of ſuch Impregnations, and I acknowledge to you, that moſt of the uncommon *Mercuries*, that I am now proceeding to tell you of, have been prepar'd after ſome ſuch manner.

4. *Another* thing, wherein a *Mercury* may differ from common *Quick-ſilver*, is a *facility to Amalgame with Gold*: for 'tis known to Guilders, Goldſmiths, and others, that are vers'd in ſuch Experiments, that to make Amalgams with Gold and Mercury,

cury, 'tis usuall enough to take six parts of the latter to one of the former, and some take eight or more. Nor is so great a proportion of *Mercury* wont to keep them from thinking it requisite to make both it and the *Gold* separably, and considerably hot to facilitate their commixture, but I have divers times had spirituall impregnated *Mercuries* with but two parts, of which I would presently make an Amalgame with one part of the *Calx*, or leaves of *Gold*, and that without any other externall heat than that of the palme of my Hand. Nay sometimes for tryall sake, I have employed but one part of *Quicksilver* to make in the palme of my Hand a mixture, wherein the *Gold* was so far from appearing, that the colour of the *Quicksilver* was not sensibly so much as impair'd.

5. *Another* difference between some *Mercuries* and those that are vulgar is, that these being put to *Calx* of *Gold*, though one do at length bring them to mix, (for it is not so easily done as men are wont to presume

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ret they will not discloſe any ſenſible
eat, but the mixture, as each of the
ncorporated Ingredients was, will to
he touch be cold: but though I know
here are many learned Chymiſts that
ooke upon incaleſcent *Mercuries*, that
s, ſuch as will grow hot upon their
ixing with *Gold*, as Chymical *non-
ntia*, or Chymæra's, yet they are not
ompetent Judges of the poſſibility
f things. For I have more than once,
r a few times, both alone, and in
he preſence of ſome curious per-
ons, found and evinc'd, that a di-
ill'd *Mercury* may be ſo animated,
at a ſingle drachm of it, or perhaps
far leſs quantity, being mix'd barely
ith my finger, with as much, or per-
hance halfe as much, *Calx* of *Gold*,
ould preſently conceive, not only a
nſible, but a very conſiderable heat:
ſomuch that ſometimes it would
rove offenſive to the palme of my
and, wherein I made the mixture.
ivers *Phænomena* of this Experiment
ay be ſeen in the Authors little Tract
*the incaleſcence of Quicksilver with
old*, now extant in the *Philoſophical
ranſactions. Numb.* 122. And I re-

member that once being to convince a very eminent Chymiſt, that there were ſuch *Mercuries* as I have beer ſpeaking of, I tooke a remnant of a certaine *Quickſilver*, which I intend never to make againe, (and of which for the ſake of Mankind, I reſolv not to teach the preparation) o whoſe diſpoſition to incaleſcence had ſuch an opinion, that though w had no *Calx*, nor ſo much as filings o *Gold*, but only ſuch pieces as he coul groſsly prepare with a hammer and paire of ſiſſers, I ventured to put m Mercury to them in a glaſs Mortar and yet notwithſtanding the thick neſs and cloſeneſs of the beaten me tall, and the coldneſs of the Veſſell the *Mercury* to the Artiſts wonde penetrated the *Gold*, and grew mani feſtly hot with it. And this faculty of our *Quicksilver* was not a tranſien and eaſily vaniſhing one, for I ha already kept the *Mercury* by me, fo ſeverall years. The *incaleſcent Mercu ries* hitherto mentioned were anima ted by tedious, and laborious opera tions, but if I had deſired only t convince gaine-ſayers, I could hav done

done it by a very much ſhorter way: for though this ſort of impregnated *Mercury's* be many degrees inferiour to the forementioned animated *Mercuries*, yet as to incaleſcence with *Gold* I know by experience a way which is indeed hard to hit, and requires a dexterous Artiſt, but which, when is ſucceeds a right, will in an hour, and perhaps a leſs time, qualify *Mercury* to grow preſently hot with *Gold*.

6. When an Animated *Mercury* is by due Impregnation qualified to Amalgame readily and intimately with *Gold*, and penetrated ſo as preſently to grow hot with it, it is not much to be admir'd, that it ſhould alſo differ from common *Mercury*, in the being able to carry up with it part of the *Gold* wherewith is was ſo ſtrictly aſſociated. I know that many learned Men, and among them divers Chymiſts themſelves, do not thinke it credible, that at leaſt Corporall *Gold* ſhould be volatilized by *Quick-ſilver*. And indeed that which is common may be many times diſtill'd from

Gold, without carrying up any of it; but this ought not to conclude againſt ſuch ſpiritually impregnated *Mercuries*, as I lately mention'd: for with a very ſmall quantity of one of them I have ſometimes elevated ſo much *Calx* of *Gold*, that the inſide and necke of the Retort were richly guilt by the adherent particles of that metall, which would ſometimes ſticke ſo cloſe, as not to be without difficulty ſeparated from the glaſs; and I remember too, that having with one of theſe noble *Mercuries* Amalgam'd about halfe its weight at moſt (if I miſtake not) of *Calx* of *Gold*, though it did not guild the inſide of the glaſs yet I found as I expected, that the diſtill'd *Mercury* was manifeſtly encreas'd in weight, as well as ſomewhat chang'd in colour and conſiſtence; which Experiment may be added to thoſe, that I formerly mention'd, to prove that *Quickſilver* (duely prepar'd) may be corporally impregnated.

7. In the *Amalgames* made of one of theſe ſpiritually impregnated *Mercuries* with *Calx* of *Gold*, I have ſometimes

times obſerv'd a thing, that argues ſuch *Mercuries* to be differing from common *Quickſilver*: of whoſe *Amalgames* with *Gold* ſuch an effect has never (that I know) been taken notice of. The *Phænomenon* I meane was this, That by diſtilling one of thoſe ſubtle *Amalgames* in a Retort, a good part of the bottom of the Veſſell, which I have yet by me, was left adorned with a very lovely colour, almoſt like that of *Turrois* Stone, inclining towards the colour of *Gold*, and ſomewhat changeable, and alſo ſo cloſely faſtned to the Glaſs, that it ſeems to have penetrated into it, though this beautifull ſtain were left by but a very ſmall quantity of the *Amalgame*, and though this mixture were diſtill'd but in a moderate fire, ſince 'twas in a ſand furnace. Nor is this the only Experiment of this kind, that I would alledge, ſince I elſewhere mention an *Amalgame* of *Gold* with an animated *Mercury*, which being long decocted, when at length by an exceſſive fire unskilfully adminiſtred the veſſell was unluckily broken, left the lower part of the glaſs permanently ting'd with a

pure and tranſparent red, that ſeem'd to me to emulate that of a not common *Rubie*.

8. *Another* difference I found between ordinary *Quicksilver* and ſpiritually impregnated *Mercuries*, that will perhaps ſomewhat ſurprize you. And it is, that though one would expect that *Amalgames* made with *Mercuries* ſo penetrant and ſo diſpos'd to adhere cloſely to *Gold*, ſhould make with it *Amalgames* far more eaſy than thoſe made with ordinary *Quicksilver* to be turn'd into red Precipitate, yet I found the quite contrary upon tryall. For whereas Chymiſts are wont to mention about ſix weekes as the uſuall time, wherein *Mercury* may be precipitated even *per ſe*, that is, without additament, and allow but a ſhorter time to make this precipitation, when 'tis Amalgam'd with *Gold*, (whereby ſome of it is detain'd, and all more expos'd to the action of the fire) I have had the Curioſity to keep an animated *Mercury* Amalgam'd with about a third part of its weight of fine Gold above twice ſix weekes,

weekes, without having so much as a graine or two of precipitate (perhaps not halfe so much) that I could perceive, though the *Mercury* grew hot with the *Gold* at their being mingled, and though the mixture were purposely kept in a good heat capable to make *Quicksilver* circulate; nor did I content my selfe with one tryall, nor with one sort of animated *Mercury*, but in above five or six months I obtained not one graine (that I could discerne) of Precipitate, though the heat was so strong, as to carry up many parts of the Quicksilver and of the Gold with it, to the top of the glasses; nay in one of them (which was a somewhat odd case) the fire was so violent, that the *Hermetically* seal'd glasses beginning to melt, the spirituous matter included in it was so forcibly expanded, as to stretch the weaker side of the glass, and give it as it were a bunch, yet without breaking it, as I can shew you in the glass it selfe, that I have yet entire by me. Nor do six months make the longest terme, that the obstinacy of my curiosity has made me keep *Gold*

in decoction with animated *Mercuries* without obtaining a red powder or *Precipitate*, though in the meane time there were produc'd very pretty vegetations, and ſometimes, which is far more conſiderable, odd changes of colours, about which it is not here neceſſary to entertaine you. The maine drift of this obſervation being to give you notice, that as far as I have yet tryed, the more ſubtle and richly impregnated *Mercuries* are far leſs apt to afford *Precipitates* with *Gold* than common *Quicksilver* is. As if that diſpoſition to be calcin'd, (as the Chymiſts are pleaſed to ſpeake) or turn'd into powder, required the preſence of the recrementitious or more ſeparable part of *Quickſilver*, that a Chymiſt would perhaps call it *Sulphur*, which was a diſcovery I could willingly enough have miſs'd. For I confeſs I had ſome hope, as well as intention, to try whether a *Precipitate* made with *Gold* and ſome of theſe noble and richly impregnated *Mercuries* would not prove a nobler medicine than *Precipitates* made with *Gold*, and only common *Mercury*: though

nough even of some of these, when exterously prepar'd and kept their ue time in decoction, experience vited me to have no slight opinion, pecially, if they be exhibited in a ft dose, and accompanyed with a roper additament, by which they ay be kept from raising any saliva- on, and have their operation either together or almost totally determin'd ownwards.

9. The *last* difference I shall observe etween some distill'd *Mercuries* and ommon *Quicksilver*, shall be their *nequality in point of specifick gravi-*. I know you will thinke this a aradox, but I can tell you, that I ad once the opportunity to examine *ydrostatically* a noble *Mercury*, for ne impregnating whereof neither orporall *Gold* nor *Silver* was em- loy'd, and yet having carefully weigh- d this *Quicksilver* in water, accord- ng to the method I elsewhere teach, n the presence of a famous and very eedfull *Virtuoso*, I found it, as I had oretold, not only manifestly, but ery considerably heavier *in Specie*

(that

(that is, *bulke for bulke*) than commor *Quicksilver* , though this *Mercur* had been feverall times diſtill'd, an by other waies deputated, which t me ſeem'd to argue, that even ſpiritu all of volatile *Gold* (for no viſibl *Gold* was employ'd, and no metall bu *Gold* is ſo heavy as *Quicksilver*) is a ble to increaſe the ſpecifick gravit of *Mercury* it ſelfe, which of all th Bodies we know, is exceeded or e qual'd in that quality but by one a lone ; and the ponderouſneſs of ou lately mentioned *Mercury* ſeems to m the more wonderfull, becauſe havin by the ſame method *Hydroſtatical* examin'd a *Mercury*, made after ſtrange way , (without common Me *cury*) I found it ſcarce at all to diffe in gravity from common *Quickſilver* ſince it did not weigh full fourtee times as much as common water the ſame bulke.

But here I ſhall obſerve to you upc the by, that 'tis not a certaine conſ quence, to inferr, that the heavier t *Mercury* is, the more fixt it muſt b for I remember that having been onc

unadvis'd as to comply with the arneſt ſolicitations of an inquiſitive ientleman, that afterward behaved imſelfe very ungratefully and unworiily to me, I gave him inſtructions ow to make an animated *Mercury*, hich I look'd upon as very much of ie like nature to the ponderous one, have been ſpeaking of, but leſs teious, and far leſs difficult to be prear'd, and whiles he found, he needed y renewed directions according as ew difficulties occurr'd to him, he ave me from time to time an account f his progreſs, and when he was adanc'd far in the proceſs, he enorm'd me, amongſt other things, nat following my direction in puriying and animating his *Quicksilver*, e found it ſo alter'd and ſubtiliz'd, hat he would diſtill it in leſs than alfe the time he had formerly emloy'd to drive it over, with the like ire and veſſells.

This is what I thought fit to ſay at reſent, about the differences beween common *Quicksilver* and prear'd (but yet running) *Mercuries*.

And

And yet I am content to add two or three advertiſements, for which, and eſpecially for the firſt of them, you will perhaps thanke me, if ever you ſhould vigorouſly proſecute in a Spagiricall way, the more noble ſort of Mercuriall Experiments.

In the firſt place then, I ſhall obſerve to you, that whatever ſome learned Chymiſts, and others teach to the contrary, it is matter of fact, that *Mercuries* may be animated or ſpiritually impregnated by more waies than one, (not to ſay, by more than a few) ſo as to penetrate *Gold* very powerfully, and grow hot with it; and it ſeems to me very probable, upon grounds not meerly notionall, that the differing wayes that are employ'd to prepare theſe animated *Mercuries*, by impregnating them with this, or that Minerall, or metall, may much diverſify their qualities and operations, according to the reſpective natures of the bodies they are impregnated with. Nay though there ſeem ſo great a diſtance between *Quicksilver* and vegetable ſubſtances, yet

et I have seen a *Mercury*, that was repar'd by the help of Vegetables ithout metalls or mineralls, which as very different from common *Quicksilver*, by being more noble than

The second thing I am to acquaint ou with, is, that as divers bodies and ethods may be employ'd in the pre-aration of noble *Mercuries*, (as I ave newly observ'd,) so it seems ve-y probable, that the common *Mer-uries* so prepar'd may have differing, s well as noble qualities and uses, ot only in respect of *Alchymy*, but f *Medicine*; as being fitted to have otent operations, as well upon hu-nane bodies, as the more stubborn nes of Metalls and Mineralls. I am ot indeed at all forward to recom-nend the needless use of Mercuriall Medicines, of which we may too of-en see bad effects, if they be not as vell prudently and cautiously given, s faithfully and skilfully prepar'd: ut since we see that in spight of *Hel-nont*, very many learned and expe-ienced Physitians allow themselves o employ, frequently enough, even

the

the vulgar preparations of commo
Mercury, ſome of which prove in
deed oftentimes in ſome ſtubbor
diſeaſes far more efficacious than or
dinary medicines, I ſee not why w
may not hope for greater and mor
innocent effects from a *Mercury* wel
purifyed and impregnated with th
Sulphur and finer parts of ſuch bo
dies, as volatile *Gold*, or *Venus*, o
Mars, or *Antimony* &c. And though
as I lately told you, I found ſuch ani
mated *Mercuries* far more indiſpos'
than common *Quickſilver*, to mak
a Precipitate with Corporall *Gold*
yet this need not hinder, but that di
vers other preparations may be made
as well with impregnated, as witl
vulgar *Mercury*: ſuch as are *Turbit*
Minerall, the white *Precipitate* tha
purges downwards, *Mercurius dulcis*
Pills of Crude Mercury made up witl
fit ingredients, (as in thoſe that are by
ſome called the blew and the black
Pill) and eſpecially the *Cinnabar* made
by ſubliming Quickſilver and Sulphur
into a purely red ſubſtance, which
though wont to be employed chiefly
by Painters, ought not perhaps to be
negle-

neglected by Physitians, since even in ordinary *Cinnabar* the vulgar *Mercury* is so bridled by the common *Sulphur*, that unless too frequently given without pauses, or in an indiscreet dose, it has not been usually found to salivate, yet does often lye not idle nor useless in the body; so that it may bee well worth trying, whether a noble *Cinnabar* may not be obtained by substituting animated *Mercury* for vulgar, especially if instead of common *Sulphur* one should employ that of *Antimony*, or of *Antimony* and *Vitriol*, which I have elsewhere shewn to make.

The third and last advertisement I will give you, shall be, that you are not hastily to conclude, that a *Mercury* that has been carefully depurated and impregnated, has not been well prepair'd, if you find it not readily to elevate corporall *Gold*, as it may seem by the past discourse that most of the animated *Mercury's* I have mention'd did. For though it be true, that I have had some *Mercuries* fitted to penetrate *Gold* so far, and mix with it so closely, that

that it would quickly upon diſtillation viſibly carry up ſome of that ponderous metall with it, yet ſo much is not to be expected from all *Mercuries* that may lay claim to the title of *Animated* or *Noble*. For I have found that ſome even of theſe, may require a ſtrong decoction to incorporate them intimately with *Gold*; and I remember that once for tryalls ſake I made *Mercury*, which upon bare diſtillation would not at all colour the glaſs; I made (I ſay) this *Mercury*, by decocting or circulating it with the *Gold* for ten dayes or a fortnight, unite ſo cloſely with the metall, that it would afterwards elevate enough of it to guild the inſide of the glaſs; and by a much longer decoction I have ſometimes had the *Gold* lodg'd copiouſly in the upper part, and even in the necke of conſiderably tall Glaſs-Eggs, *Hermetically* ſeal'd, one or two of which I can yet ſhew you.

The

The V. Part.

Of the Producibleneſs of Phlegme or water.

OF the ſeverall ſubſtances that Chymiſts obtaine by the fire from mixt bodies, that which they call *Phlegme* or *Water*, and would have Men looke upon as *meer Water*, ſeparated by a preceding *Analyſis*, ſeems to the *Helmontians*, and diverſe other modern Artiſts, to bid the faireſt for the Title of *Elementary* and *Primordiall*. Wherefore it will now be fit to conſider, whether, about that alſo, we may not juſtly retaine ſome doubts, and rationally ſuſpect, that all that they call the *phlegme* of body's, was not in the forme of *Elementary* ſimple water, preexiſtent in the body, whence 'tis obtain'd: but that even

ſuch portions of matter, as many of thoſe that paſs among Chymiſts for *Phlegmes*, may be produc'd *either* by the operation of the fire, *or* by other wayes.

In order to the enquiry, it will be fit to premiſe ſomething againſt the preſum'd ſimplicity and Homogeneity of the liquors, whereto the Spagiriſts give, in common, the Name of *Phlegm*; that in caſe ſome of the produced liquors we ſpeake of ſhall be deny'd to be preciſely of an Elementary nature, it may appeare that that ought not to hinder us from allowing them the name of *Phlegm*, provided that they be not remoter from ſimplicity, than thoſe to which Chymiſts grant that Appellation.

And *firſt*, I conſider, that beſides thoſe Quality's that are common with water to diverſe other liquors confeſſedly not ſimple, as tranſparency, want of colour, aptneſs to be imbibed by moſt ſorts of Vegetable and Animall Subſtances: the two Qualities, upon whoſe account Chymiſts are wont to

to call a body *Phlegme* or *Water*; are, it's appearing to them Insipid, and its being of a Volatile and fugitive nature.

I further consider, that not only divers of those liquors that pass for *Phlegme*, will yeild a taste sensible enough to him that will hold them with attention of mind, for a competent time, in his mouth, but that the *Criterion* of liquors by the Taste is nothing near so certaine as many thinke: For, not to mention, that 'tis plaine, that some kinds of doggs, as Setters, Spaniells, and Blood-hounds take notice of many things by their odours, that we Men have no perception of by our smelling, which may argue, that our Senses may not be moved with objects that would affect them, if they were of a more delicate conexture; not to mention this (I say) 'tis plaine that the subtlety of the sence of tasting differs among Men themselves. And those that drinke nothing but water, will often tell us of a great Disparity betwixt common water, wherein other Men find not

any. And I remember, that when once I did, though but for ſome Months, confine my ſelfe to drinke water, I could diſtinguiſh the Limpid waters of differing places, almoſt as manifeſtly as I now diſtinguiſh Beeres, which after I fell againe to drinke Wine and other liquors, I ceas'd to be able to do.

The Conſideration of *Quicksilver* may, methinks, let us ſee, that 'tis poſſible for a groſs and fluid body, that is far from Elementary *Water*, to be inſipid. For *Quicksilver* is without queſtion a fluid, and at leaſt in reference to ſome bodies, *Gold*, *Silver*, and ſome others, a liquor; ſince it ſokes into their pores, and ſoftens the bodies. The ſame *Quicksilver* may alſo ſerve to ſhew, by its diſpoſition to fly away in the fire, that Volatility, even in conjunction with inſipidneſs, is no certaine mark of an Elementary or ſimple, nor conſequently of a Primordial body. And indeed ſince Volatility depends mainely upon the extraordinary minuteneſs of the particles whereof a body conſiſts, and

and on their being incoherent, and of ſhapes fitted for Motion; this quality may be acquired by ſo many differing wayes, and be found in bodies otherwiſe of ſuch differing Natures, that unleſs it be found aſſociated with the other qualities proper to *Phlegme*, it will be but an unſure Argument, to prove the body that it belongs to, to be Elementary, and not to have been by compoſition, diviſion, or tranſpoſition *produc'd*.

If it be true as the *Carteſians* will have it, that *water* conſiſts of particles, that like little Eeles are long and extreamely ſlender, and conſequently flexible; I ſee not any poſibility, that the various action of the fire, upon the Minute parts of a body, and that which it may cauſe, the corpuſcles of one body to have upon thoſe of another, may produce *water*, that did not in the form of water preexiſt in the body that affords it: for it ſeems to me poſſible enough, that the particles whereof a corporeal Maſs is made up, may have

ſuch ſhapes, Sizes, & contextures, that by the various agitation which the pervading corpuſcles of the fire may produce amongſt them, whatever edges and points they had before, may by mutual attrition of the Corpuſcles be worn of, and by the ſame means, ſo much of the ſubſtance may be worne away, that what remaines, cannot but be very flexible, and by all theſe qualifications become fit to make a particle of water. As a bar of *Iron* may by divers ſtrokes of the wedge and Hammer skilfully employ'd, be divided into longe and ſlender parts, whoſe edges and points being blunted, they may be reduced into ſlender, and every way flexible Wires. But not to build on ſpeculations, let us proceed to ſome experiments, which afford *Phænomena* that ſeem favourable to our *Hypotheſis*.

Amongſt the bodies about which Chymiſtry is converſant, thoſe that ſeem to be the moſt indiſpos'd to be turned into *water*, are the Metalline, and Mineralls ones: ſo that if it can be made appear, that any of this ſort can

can be changed, into an Aqueous liquor, twill make it highly probable, that Aqueous Liquors may be by Chymical operations *produced*, especially in vegetable and Animal bodies, which seem far more susceptible of such a change, than the stubborne subjects of the Mineral Kingdome. And since *Quicksilver* is by many learned Men, as well Chymists as others, lookt upon as one of the few most indestructible bodies in Nature, and by its great ponderousness, in which it exceed's all the known bodies of the world save one, is so much the more remote from such a liquor as *water*, that has not the sixteenth part of its specifick weight; If *Quicksilver* it selfe can in great part be turned into an Aqueous liquor, it will not a little favour the Doctrine proposed in these Notes; for which reason I shall subjoyn the ensuing story.

Relating to a very ingenious and sober Physitian of my Acquaintance what had befaln me in distilling *Mercury*, from whence I once obtain'd a *water* without addirament, without

being able to make the like Experiment afterwards ſucceed, he aſſured me that he and a friend of his, had ſome years paſt provided a very large *Dutch* Retort of good Earth, furniſhed with a Pipe of about a foot long, to caſt in the *Mercury* at, and that having by little and little conveyed through that pipe a pound of *Quickſilver* into the candent Retort, they obtained four ounces of *Water*, and loſt in ſpite of their care two ounces of matter (whatever it were,) the remaining part of the pound having been elevated in the forme of *Mercury*. And when I ſuggeſted, that perhaps the *Water* that came over was afforded by the aqueous particles of the Earthen Retort it ſelfe, he replyed, that, to prevent their being impoſed on, they had been carefull not to put on the Receiver, till the Retort had been made throughly glowing hot, and that this liquor was far from common *Water*, he thought to be paſt doubt, by that which follows. For I having acquainted him with an odd tryall or two, I had made with Mercuriall *Water*, and asked him, whe-

whether he found the like effects from
is, he told me, that his friend and he
oured both their distilled *Mercury*
nd their *Water* into a kind of *China*
up, and though it were in *June*, left
open in a Garret for two or three
layes, upon a Presumption his friend
ad that this Mercuriall *Water* thus
ordered would turne a good part of
he *Quicksilver* into it's own nature,
nd so multiply it selfe upon it. But
when they came to visit their Cup a-
raine, they were much surprized to
ind their *Water* all gone, and that
he greatest part thereof was turn'd
gaine into *Mercury*, which they con-
cluded from this, that they miss'd
upon the ballance but about halfe an
ounce of the whole matter; which
(halfe ounce) they supposed to have
been lost by evaporation; the other
three ounces and a halfe being found
in the encreased weight of the Mercu-
ry.

The mention I have made of *Quick-
silver*, puts me in mind of an Argu-
ment *ad hominem*, that may deserve
to be considered, by the chiefe sect
of

of modern Chymiſts, the *Helmontians*; for if it be true which their maſter teaches, that by his Liquor *Alkaheſt*, not only *Quicksilver*, but all other tangible bodies, may be reduc'd into inſipid *Water*, juſt like Rain Water, I may be allowed to infer, that *Water* may be *produc'd*, ſince ſalt and Sulphur themſelves may be turned into *Water*. I know the *Helmontians* may anſwer, that this is not ſo much a production, as a reduction, ſince all things conſiſting originally of *water*, the *Alkaheſt* does but deprive it of the diſguiſes, that ſeminal Principles put it into, to make it appear, under the form of *Gold*, *Quicksilver*, *Plants*, *Animals* &c. But this Anſwer may be elſewhere further examined: for the preſent, it may perhaps be ſufficient to reply, that even by this Anſwer 'tis granted to appear by Experiment, that *water* has been copiouſly produc'd out of Mineral bodies, but it has not yet been made appear, that thoſe bodies were produc'd out of *water*.

But this is not all, nor perhaps the Prin-

rincipall thing I have to say in fa-
our of the opinion pleaded for in
neſe Notes. For ſuppoſing bodies
y being reduc'd, by the *Alkahest* and
ne fire, into an inſipid Liquor, were
eally reduc'd into *water*, yet the *Hel-*
ontians would not fully ſatisfy me.
'or *Helmont* relates, that by abſtra-
ting his immortal Liquor from ſtones,
r ſuch kinds of bodies, he turns them
nto ſalt equiponderant to the Con-
rete; which Salt by further opera-
ions he reduces, as he ſuppoſes, into
lementary water. Since then he ſtops
ot at ſalt, but goes to a further tranſ-
nutation, and concludes, that a Stone
oth not conſiſt of ſalt, becauſe that
alt may, by further operations, be
urned into inſipid *water*; he muſt
ive me leave, on the ſame ground to
rgue, that inſipid *water* is not the
irſt matter of bodies, ſince by a fur-
her operation of the fire, that liquor
t ſelfe may be, at leaſt in great part,
urned into *Earth*. For I elſewhere
elate ſome Experiments of my own
nd a friends, in which cleare *water*,
livers times very ſlowly diſtilled out
of clear glaſs bodies, left every time

a

a terreſtriall powder at the bottom: as if (in caſe *water* be ſo *Homogeneous* a ſubſtance as is ſuppoſed,) the whole body of the *water* might, by reiterated Diſtillations, without violence of the fire, be reduced into *Earth*; whereof I remember in the laſt tryall of mine, I had enough to cover the bottom of a large Cucurbit, out of which the Diſtillations had been made.

And on this occaſion, I ſhall add a Tryall, which ſeems to argue, that without the help of often repeated diſtillations in tall Cucurbites, cleare *water* it ſelfe may, by the operation of the fire, be chang'd into another Body.

We tooke then very pure and limpid *water*, which had by our *Pneumatick* Engine been carefully freed from the Aeriall particles, that are wont to be harboured in the Pores of that liquor: This in a new bolt-head of ſuch a ſize, that the matter might have roome to play and circulate, we ſeal'd up *Hermetically*, and placing

placing the veſſell in a digeſtive Furnace, we left it there above a yeare, and obſerv'd, as we expected, that after it had continued for a good while, there began to forme themſelves in the water little concretions heavier than it, which in proceſs of time encreaſed in magnitude, and, as we thought, in number, making a kind of *Terra foliata*, that conſiſted of a multitude of little thin filmes or ſcales, (like thoſe of the ſmaller ſort of Fiſhes) which, when the glaſs was ſhaken in an enlightned place, were copiouſly diſpers'd through the body of the Liquor, and appear'd variouſly and vividly colour'd, being ſome of them almoſt as big, as ſpangles, and more glittering; and when the agitation ceas'd, they preſently fell to the bottom, which they cover'd in the forme of a *Terra Foliata*; by their ſubſidence manifeſting themſelves to be notably heavier *in ſpecie* than the *water* they had been form'd of. And the longer the glaſs was kept in the digeſtive Furnace, the more of this fine Terreſtriall ſubſtance was produc'd: And leaſt the effect ſhould be aſcribed

aſcribed to the abſtraction of the *Air* from the *water*, handled as is befor related, I ſhall add, that we produc' the like ſubſtance, though, as i ſeem'd, not ſo copiouſly, after the lik manner, in *Water*, that had not at al been freed from *Aire*.

The

The VI. Part.

Of the Producibleneſs of Earth.

OF all the ſubſtances obtainable from mixt bodies, that which to perſons prepoſſes'd with *Helmontian* opinions may ſeem the moſt ſimple, elementary, and unchangeable, is, that which they call *Earth* or *Terra damnata*: becauſe there is ſuppos'd to be no doubt, but that the calcining or incinerating violence of the fire muſt not only have driven away the Mercurial and other volatile parts, but muſt alſo have quite burnt out the Sulphurs, which oftentimes are more fixt than the reſt; as the water on the other ſide muſt have diſſolv'd away all the *Alcali* or fixt ſalt.

This Ratiocination I confeſs, is very ſpecious and probable, but yet not ſo ſatisfactory, but that a Sceptick may retaine not irrationall doubts about

bout the cogency of it, upon ſuch conſiderations as I am now going to propoſe.

And I will begin with conſidering that, whereas the things wherein this ſuppos'd ſimplicity, and unchangeableneſs of the Earthy part of mixt Bodies, is founded, are theſe Three: it not diſſolving in water; its not affecting the Taſte; and its not having flowne away from the incinerated body, that afforded it; it may with probability be doubted, whether any of theſe or all of them put together do neceſſarily evince what Chymiſts pretend they do.

And in the *firſt* place according to the different conſtitutions of certain ſorts of bodies, I thinke it fit to make a diſtinction between the dry and heavy parts, that remaine after a Body has been expos'd to the violence of the fire, and if need be, freed from its ſalt as much as it can be, by the affuſion of water. For 'tis evident, that in ſome Bodies, eſpecially of a Metalline nature, the fire, that makes

that

that which they call calcination, do's not operate as it do's in the burning of Vegetables. For, besides that sometimes almost (and sometimes more than almost) the whole weight of a minerall is to be found in that which they call it's *Calx*, and is manifest in the Calcination of *Lead* and *Tinn per se* (if skilfully perform'd,) the *Calx* is in great part reducible sometimes nto a body of the same nature with hat which afforded it, and sometimes nto some other Body, very far from being Elementary: as is manifest *partly* in the reduction of *Minium*, (which s *Calx of Lead* made *per se*) which, s to the greatest part of it, we have more than once, by the bare way of ordering the fire, reduc'd in a very hort time, and without additaments, nto malleable Lead; and *partly* in the *Calces* or (as they also speake) Ashes of Antimony, which by bare fusion te easily reduc'd into glass, whence ve have sometimes obtain'd an Antinonial *Regulus*. So that 'tis manifest, hat there is a great deal of difference, *between* the Ashes (taking that word n a large sence) of Metalls, and of

ſome Mineralls, where almoſt the whole Body is by the fire converted into a dry and heavy powder, *and* the Aſhes of incinerated Vegetables, who uſually leave but a little quantity of *Earth* behind them, in compariſon of the matter which the violence of the fire hath driven away.

But ſetting aſide the above-mention'd Metalline *Calces*, which without queſtion remaine compounded Bodies, if metalls themſelves be ſo; and to forbeare examining, whether they be not further compounded with Corpuſcles of the fire, or fuel, that are embodyed with them: I conſider, that the Qualities which make *other* Aſhes paſs for Elementary *Earth*, may be produc'd in portions of matter that are not ſimple, either by compoſition or change of texture.

I have elſewhere occaſion to take notice of Bodies, which though when they are ſingle, they will eaſily diſſolve in water, yet the reſult of them will not: And you may find inſtances of this kind, among the *Magiſteries*, as Chymiſts

Chymists call them, made of severall Bodies, by precipitating their solutions (made in acid liquors) with oyl of *Tartar per deliquium*.

From oyle of Vitriol and spirit of Wine, though both most readily dissoluble in water, we have by bare digestion and distillation, obtained a pretty quantity of a substance, that we found not to dissolve in water, and which seemed to be insipid and fixt enough.

There are Stones, some more and some less pretious which though I could by the help of the fire deprive of their colour, and bring to a white powder, yet it did not appeare to me, that they were really calcin'd, or would in water yeild any salt: so that if these Stones be compounded bodies, as Spagirists tell us they are, we see that there may be other Corpuscles besides metalline ones, which though reduc'd by the help of the fire to a white powder insipid and not dissoluble in water, are yet remote enough from an Elementary nature.

But I need ſeek no further, for inſtances of this kind, ſince Spagiriſts themſelves teach us, that the Aſhes of Wood may by the Violence of the fire, be turn'd into glaſs; which being a body compos'd of the Earthy and Saline part of the Aſhes (for they tell us, that *Earth* ſeparated from the Salt will never be vitrifyed) muſt be according to their own confeſſion a compounded Body: which being at laſt made by the utmoſt violence of the fire, muſt be fix'd, indiſſoluble in water, and conſequently inſipid. And without taking this Vitrification upon the Chymiſts authority, 'tis manifeſt, that in glaſs made the common way, there is a great deal of *Borellia*, *Sal-Alcali*, or other Lixiviate Salt mixt with the Sand: as is evident, not only becauſe Artificers find the ſalt needfull to diſſolve the Sand, and bring it to fuſion, but becauſe the Glaſs uſes to weigh very much more, ſometimes (as an Ingenious Maſter of a Glaſs-Houſe anſwered me) thirty, or forty pound in an hundred, than the Sand that was put in.

I ſhall add, that, ſince Chymiſts aſcribe all *Odours* to Sulphur, I may reaſonably conclude againſt them, that in ſpight of all the violent fire, which is required to the making common glaſs, there is ſtore of Sulphur, as well as ſalt in it. For I have often tryed that by barely rubbing two large pieces of glaſs, one againſt another, there would quickly be produc'd a ſtrong offenſive ſmell. And yet Glaſs which thus appeares to be not only a Compounded, but a Decompounded Body, ſince the Sand or *Cugali* (as the *Venetian* Glaſsmen call their Pebbles) or other Stones being themſelves mixt Bodies, are further compounded with the Salts that diſſolve them: *Glaſs*, I ſay, is a Body that manifeſtly poſſeſſes all theſe three qualities, which Chymiſts require in their *Earth*, being taſteleſs, indiſſoluble in the Water, and fixed in the fire. And if Aſhes alone be (as Chymiſts teach us they are) capable of vitrification (and indeed an inquiſitive Owner of a Glaſs-Houſe anſwered me, that once, if he much miſremembred not, made, but not ea-

ſily, glaſs of Aſhes alone without Sand;) how are we ſure but that in common Aſhes, freed the common way, from their fixt ſalt, that which is called the ſimple *Earth*, may not be a body compounded of two or more ſubſtances, which by their coalition, and new Texture produc'd by the action of the fire, have been brought to a kind of Vitrification, or otherwiſe have acquired the few obvious Qualities, that Chymiſts are wont to thinke ſufficient to give a Production of the fire, the name of *Earth*.

Tis obvious to obſerve, that divers Bodies, when they come to be of ſenſible bulke, will ſinke in Liquors, in which their Corpuſcles would freely ſwim, if ſo many of them did not ſticke together. As of Salt and Sugar, the Lumps, and even the graines, whiles they remaine ſuch, will fall to the bottom of Water, in which when they are diſpers'd into minute and inviſible Corpuſcles, they will eaſily ſwim. And I have obſerv'd,

obſerv'd, that in ſtopt glaſſes ſome Salts, and other Bodies, that for many Months remain'd undiſtinguiſh'd in the Liquors that harbour'd them, would in tract of time, have Conventions made of their Particles, that would then ſubſide, and be no more carry'd up and down by the particles of the Liquor. And I ſee no impoſſibility, that ſomewhat of this kind may happen to the particles, whereof water conſiſts: for if ſome of theſe, by frequent occurſions and Attritions come to apply themſelves to one another, ſo as to have a fuller, and more immediate contact than formerly, and to be intangled among themſelves, and perhaps alſo to exclude ſome very thin and ſubtile Aire, that may be ſuſpected to lurke about them, and contribute to their ſuſtentation; if I ſay, this Union or ſtrict Adheſion of Aqueous Corpuſcles, ſhall happen to be made, the Aggregates or Cluſters, though as to ſenſe, but very ſmall, may be too great and unweildy to be any longer parts of water, but may ſubſide in that Liquor; and if their Union or Adheſion be ſtrict e-

enough, they will upon the ſame account be unfit to be carryed up in the forme of Vapours, and exhalations by Heat, and ſo may be like *Earth*, fix'd in the Fire, as well as not diſſoluble in water.

I have ſometimes alſo had a ſuſpition, that the production of an Earthy ſubſtance in water, may be furthered by the particles of fire, that are employ'd to make it circulate; and that of thoſe Igneous particles, which, as I am apt to think, pervade the glaſs, ſome of the groſſer, or rather the leſs ſubtile, may in their paſſage faſten themſelves to ſome aqueous particles, fitted to adhere to them, and may with theſe begin to make ſome inviſible Concretions, to which afterwards other congruous particles may little by little ſticke in their paſſage, and ſo at length compoſe ſenſible Aggregates of powder: which may be illuſtrated by what happens in the precipitation of *Quick-ſilver* without addition, where the Mercurial particles being aſſociated by, and probably with ſome of thoſe

of

of the fire, begin to forme Concretions, at first very minute, which afterwards encrease more and more, by the accession of other adhering particles, till all the *Mercury*, or the greatest part of it be reduc'd, from a fluid Body to a red powder. And perhaps it may countenance my Conjecture, about the production of an *Earthy* substance, by a briske concurrence of the particles of fire, if I add, that though I have kept high rectifyed spirit of Wine for above a year together *Hermetically* seal'd, and for the most part of that time in a Digestive Furnace, without finding any *Earthy* Residence, yet, when I ordered a Bolt-head, that, though it were *Hermetically* seal'd, the *Alcool* of Wine that was put into it might be boiled without breaking the Glass, I found that in a short time this liquor would afford a not inconsiderable quantity of such a subsiding Talcky substance, as I obtain'd from the water formerly mention'd. But these things I need propose, but as illustrations that may somewhat help you, to conceive how Water may be turn'd into *Earth*. For,

whe-

whether it be by these, or any other waies, that the thing is performed, yet since the Experiment formerly recited, that Water by frequent Cohabations may be more and more turn'd into *Earth*, argues the matter of fact, our not being able to explicate the manner, does not hinder the thing from being true, nor the Argument we build on it from being good: since even Water, to which by some operations of the fire and the *Alkahest*, 'tis pleaded that Bodies are ultimately reduced, may it selfe by a further and very simple operation of the fire be reduced into *Earth*.

I have somewhere mentioned, for I remember not in what Paper I have observed, *Salt-Petre* distill'd with Clay, to lose much more of its weight, than can be suppos'd to have ascended in the forme either of *Spirit* or *Phlegme*. And now to make this Experiment more short and easy, I shall add, that I lately made it in a Crucible, (instead of a Retort) wherein a double weight of finely powdered Tobacco-Pipe Clay, very well

ell mixt with pulverized Chryſtalls
: *Nitre*, were kept three houres,
a violent fire, and then the mix-
re being taken out, the remaining
t ſalt was carefully extracted, but
nounted to very little in compariſon
what *Nitre* was wont to yeeld,
hen calcin'd with Charcoal: and
is ſcant proportion of fixt ſalt did
ot proceed chiefly, from a very co-
ious A volation of Nitrous ſubſtance,
pear'd probable by this, that the
put Mortuum was much more pon-
rous, than was to be expected,
on the ſcore of the Tobacco-Pipe
lay, that was firſt employ'd, and
e *Alcali* that was extracted; ſo that
e new weight acquired by the Clay,
em'd manifeſtly to proceed, from
e acceſſion of a portion of the
alt-Petre, that by this operation
as turned into *Earth*. Inſomuch,
at of ſix drachmes that four ounces
f Clay had acquir'd, in weight, after
e Crucible was taken out, not ſo
any graines could even by boyling
ater be obtain'd from the whole *Ca-*
t Mortuum; which when firſt taken
ut of the Crucible, was almoſt quite
nſipid. That

That Earth may be *de novo* produced, may likewiſe be probably argued from the Experiment, I formerly related about the deſtruction of the ſalt of *Tartar*, by igniting it and putting it into fair Water: for there remained after the numerous filtrations, and if I miſremember not, after every one of them, a ſubſtance, in the filter, which, for ought appears, may be as well called *Earth* as that which was ſeparated from the calcined *Tartar*, the firſt time it was put in the water, to divide the ſalt from the *Earth*. For in our Experiment as well as in the common operation, I come from mentioning, the way of proceeding is the ſame, and in both their remaines in the filter a ſubſtance, which by its ſtaying there, ſhews it was not diſſoluble in the water, and which before it came thither, ſhewed, by its enduring a violent fire, that it was alſo fixt as *Earth* ought to be. Nor would it much move me, if it ſhould be found, that this factitious *Earth* may have ſome ſuch operation upon ſome particular Body, as is not thought to belong to true Elementary *Earth*.

For

ır ſince it is obtained by a Chy-
cal *Analyſis*, if it have thoſe qua-
y's that in the general eſtimations
naturaliſts, make up the notion
what they call *Earth*: I think that
ght to ſuffice us, at leaſt till the
ıymiſts give us ſome more accurate
ıtion of genuine *Earth*, and ſhew
ſuch a thing, and teach us a better
ıy of *Analyſis*, to obtaine it.

For in many body's that are, with-
ıt ſcruple, lookt upon as *Earth*,
ɔbſerve quality's that do belong to
e received notion of Elementary
arth. This I ſay, becauſe I ſee not
hy ſuch a Texture as will ſuffice, to
ake a portion of matter indiſſoluble
water, fixt in the fire, and inſipid
ɔon the tongue; may not alſo make
fitt to operate actively upon ſome
ɔdy's, and modify the operations
f ſome others, that act upon it. And
our *Earth* from ſalt of *Tartar*, be
ejected as ſpurious, they ought to
ɔnfeſs the inſufficiency of their com-
ıon way of ſeparating a true *Earth*
om the Body's they Analize: for it
eems Calcination and ſolution in wa-
er, and filtration, which make up
their

their uſuall method, will not ſuffice
make our *Earth* of *Tartar* paſs f
true; though it appear not to be n
ſo remote from an Elementary natu
as ſome other Body's that are obta
ned from *Earth* by the vulgar *Ana*
ſis. Of which I ſhall at the cloſe
theſe notes give an Inſtance, in w
dulcify'd *Quick-lime*, which accordi
to the Doctrine of the Chymiſts, oug
to be an Elementary *Earth*; and y
ſeems not more ſo, (if it be ſo much
as our *Earth* from ſalt of *Tartar*. Ar
for the preſent, I ſhall add, that t
Caput Mortuum of *Vitriol* remainin
after it had long endured a violent fir
though it were diligently freed fro
ſaltneſs, by reiterated Ablutions wit
hot water, was yet far from bein
an Elementary *Earth*, as appearet
not only by its deep purpliſh colou
and its ponderouſneſs, far exceedin
that of *Earth*, but by a tryal tha
I purpoſely made to examine it.

Upon this occaſion I remember
that a Learned man of my acquain
tance, who viſited the Mines of *Hun*
gary (and dealt much in *Hungarian*
Vitriol

Vitriol, affirmed to me, when I told him I conceived the *Caput Mortuum* of it to retaine much of the Meral-line Nature, that he had upon a certain occasion out of the *Colchothar* of a certaine sort of *Hungarian* Vitriol, not only received a pretty deal of good Copper, but separated from that Copper, a pretty portion of silver, and some grains of true Gold.

Before I put a Period to there Notes about *Earth*, though my Argument do not need nor require that I should do it, yet upon this faire occasion, I shall here take leave to doubt, whether such an *Elementary Earth*, as the Schooles tell us of, do yet appeare to be more than a Notional thing. For to what I have already said concerning the *Earths* supposed to be produc'd by Chymical *Analyses*, I shall now add, that I have not yet seen it proved, that *Nature* does any more then *Art*, afford us a true *Elementary Earth*; at least I can say, that some, which seem to be of the more simple sort, I found upon examination to have Qualities not ascrib'd

ſcrib'd to pure *Earth*. For though *Tobacco-pipe Clay* by reaſon of it's fixity, whiteneſs, and Inſipidneſs, and it's lying oftentimes deep enough beneath the ſurface of the ground, may, as probably as almoſt any other Native *Earth* we know, be look't upon as *Elementary*, yet *Tobacco-pipes* well baked may ſometimes be made to ſtrike fire: and I have more than once tryed, that by briskly rubbing two peices of a new Tobacco-pipe, one againſt another, they would in a Minute or two of an Houre grow warme, and being immediately ſmelt to, manifeſtly afford a ranke odour, between Sulphureous and bituminous, almoſt like that which proceeds from Pebbles or Flints, when they are likewiſe rub'd hard againſt one another. As if Tobacco-pipe Clay were not a true *Earth*, but a fine white Sand, conſiſting of Graines too ſmall to be diſtinctly taken notice of, like thoſe of other Sand. On which occaſion I ſhall add, that I found by a Hydroſtaticall Tryall, that it's ſpecifick gravity was but little differing from that of Pebbles, its probable in weight

to

to water of the same Bulke being as two, and a quarter to one. A Tobacco-pipe may also be somewhat melted by a very vehement fire, (for a less will scarce serve the turne) as may be argued from this, that it may by such a fire be brought to bend.

Porcellane, or the matter whereof *China* dishes are made, is not, as some Travellers and Learned Men have fondly imagin'd, a composition that requires to be buryed under ground, for I know not how many yeares, to ripen it into *Porcellane*: but as some late Authors informe us, and as I have been assured by a Person, that went purposely to that place in *China*, that is so famous for the making of *Porcellane* vessells, it is a pure sort of Clay, but yet this I find not to be *Elementary Earth*. For besides that I have observed, that a Violent fire will make it somewhat melt; I find that with steel, it will easily enough strike fire almost like a flint. The like I have observed in *Porcellane* very artificially imitated

with a ſort of *Engliſh* clay. And I found too, that the matter even of dark colour'd Juggs of the better ſort, and well baked, would with a Steel afford ſparkes of fire. I forgot to tell you when I was ſpeaking of fine *Porcellane*, that I found its ſpecifick gravity to be very near the ſame with that of Flints, and Tobacco-Pipe Clay. But I remember I went once to viſit a Grove or Pit, where at the depth of divers Yards, they were wont to digg up a certaine white Earth, which diſtill'd by an acquaintance of mine afforded a Liquor, that was put into my hand to try, and which I found to be very rich in a Volatile Salt, that taſted and ſmelt much like ſpirit of Urine, or Harts horne, and had almoſt the ſame effects in changing the colours of ſome Body's, and precipitating of others. I remember too, that I found by the operation of a *Menſtruum* or two upon *Tripoli*, that, as white and pure a Virgine *Earth* as it ſeem'd, yet it was not *Elementary*: & on the other ſide a Maſter of ſome *Engliſh* Mines having preſented me, among other Mineralls, which he knew

knew not what to make of a very white ſubſtance, whereof he had ſtore, which he thought an *Earth*, and which was judged by an Excellent Artificer, much converſant with *Tripoli*, to be finer even than that *Earth*, I gueſs'd it upon Examination to be a kinde of *Talcke*, whoſe leaves were exceeding fine and minute. The Reſult of theſe relations may be, not only that we may yet retaine our doubts, whether the Aſſertors of *Elementary Earth* can ſhew us any Native ſubſtance, that deſerves that name: but alſo, whether thoſe things that remaine after Chymical *Analyſes*, though they have all the Qualities that are judged ſufficient to denominate a portion of matter *Earth*, may not yet either be compounded Body's or be endowed with Qualities, which belonge not to ſimple *Earth*. To explaine and confirme which, I ſhall give an inſtance in ſome *Quick-lime*, that I purpoſely examin'd. For though it had been, by frequent ablutions in warm water, carefully dulcifyed, and ſo was as well inſipid, as fixt, and indiſſoluble in water: yet I found, I could

readily diſſolve it in divers *Menſtruum's*, and even in ſpirit of Vinegar, whereas true *Elementary Earth* ought to be as well indiſſoluble in ſuch liquors, as in water.

If I had not been to deal with Chymiſts, but Ariſtotelians, I might have ſav'd my ſelf the labour of ſolicitouſly endeavouring to prove, that Earth and water may each of them be produc'd from Body's of a differing nature from it. For though the Peripateticks will not allow *the whole Elements* to have been produc'd, becauſe they looke upon them as integrant parts of the world, which *Ariſtotle* laboriouſly (though not ſolidly) maintaines to be eternal: Yet the *Portions of the Elements*, they will have to be interchangably tranſmutable. So that what was once water may be Earth, and Earth may by intermediate alterations, be turned into water.

But thoſe I have to do with, being the vulgar Chymiſts, who will have the material principles or ſimple ingredients

ingredients of mixt Bodies, coevall with the World, and uncapable of being either destroy'd or produc'd; it was not allowable for me to proceed upon the *Aristotelian Hypothesis*, of the transmutableness of what they call Elements, especially because, that though I do admit it, as 'tis, according to my opinion, a part of a more general truth; yet I do not think, they have well prov'd it by their Arguments: which since I my self do not like, I think 'twere disingenious to press them upon others. And without having recourse to their Doctrine, there will occur some other particulars, that may be added to those already mentioned, to countenance the producibleness of the Principles of mixt bodyes, in some other papers that are to follow these Notes. Though in strictness I was not oblig'd to say so much, as I have already said, since pretending to call in question no more than the *three Hypostatical Principles of the Chymists*, I might easily have excus'd my selfe, for having let alone the production of *Water* and *Earth*: since the generality of Chymists reckon not

not thoſe Bodys amongſt their *Hypoſtatical Principles*; but looke upon them, as recepticles, or, as others would have them, Recrements of theſe, or, as on ſome other account, related to them. Brt I was not willing to omitt *Water* and *Earth*, becauſe ſome of the more learned of the modern *Spagyriſts* have adopted them, into the Number of the *Principles* of mixt bodies, and becauſe I finde by experience that in Chymical *Analyſes*, they are at leaſt as often to be met with, as ſome of the *Principles* confeſſedly Hypoſtatical. But what has been delivered about *Earth* and *Water*, having much added to the bulke of theſe Notes: 'tis time I ſhould put a period to this part of them, in reference to which I hope it will be conſidered, that I do not pretend that every ſingle experiment by me alleg'd, do's ſufficiently prove, that the body obtain'd by it, was in the ſtricteſt ſence *produc'd*. For if the ſeveral experiments, and other proofes do in conjunction, and as it were in a body, make up a good Argument, that the ingredients they relate to, may be produc'd;

produc'd; 'tis as much as will, I hope, be expected, from these Notes, which having been written by way of Appendix to the *Sceptical Chymist*, may be allow'd, as well as that book, to employ *some* Proofs, not altogether cogent, and may be judg'd not improper, though some of the Arguments propos'd in them to show that *Chymical Principles* are not all ingenerable and indestructible should be but meerly probable. And yet this I shall venture to intimate, that vulgar Chymists and *Aristotelians* may, not perchance, find it so easy a thing, as 'tis like many of them will imagine, confute divers passages of the foregoing Tract, since probably their objections will suppose some thing or other, which though taken for granted among them, and perhaps by several other learned Men, I do not admitt as true, or think demonstrable, but rather questionable upon very rational grounds. And though perhaps I should not have brought in some of the Experiments mentioned in the preceeding Notes, if I had not had a mind to throw together what I thought might

might contribute to ſo uſefull a thing, as a *Natural Hiſtory of Chymical Principles*; on which others, if not I, may hereafter ground a Theory of them; yet this may alſo deſerve to be conſidered, that if *any* of the foregoing Experiments, though never ſo few, do really prove, (as 'tis like ſome of them will be judg'd to do) that *any one* of the Chymical Principles may be, *de novo, produc'd*; that alone will ſuffice deſtroy the *Univerſality* and *intireneſs* of their *Hypotheſis*; and beſides give cauſe to ſuſpect, that by further induſtry, the Producibleneſs of other Principles alſo, may be diſcovered.

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